FINAL REPORT
MEDICAID TAPE-TO-TAPE: RESEARCH AND DATA ANALYSIS

FINAL REPORT
MEDICAID TAPE-TO-TAPE: RESEARCH AND DATA ANALYSIS

Embry M. Howell, Principal Investigator
Suzanne Dodds, Project Director
Tracey Orloff, Marilyn Ellwood, Ann Cherlow, and Elizabeth Tollers

Federal Project Officer: Penelope Pine

SysteMetrics/McGraw-Hill, Inc.

HCFA Contract No. 500-86-0016

March 1991

The statements contained in this report are solely those of the authors and do not necessarily reflect the views or policies of the Health Care Financing Administration. The contractor assumes responsibility for the accuracy and completeness of the information contained in this report.

ACKNOWLEDGEMENTS

Numerous SysteMetrics and HCFA staff worked on many aspects of this project. Their names and individual contributions are too numerous to mention. The names of key analysts and their research topics can be seen in the reference list for this report. The major data processing activities were accomplished by Kay Miller, Kate Sredl, Linda Graver, Sue Dodds, Eva Hom, Jon Blake, and Deo Bencio. Tables and graphs for this report were developed by Linda Graver and Terrence Davey. Ann Prindle provided word processing support.

We acknowledge the many hours of help SysteMetrics has received from the staff of state Medicaid agencies. Our major contacts were John Keith (California), Albert Skellie (Georgia), Keith Pier (Michigan), Tom Fanning (New York), and Susie Baird (Tennessee).

Finally, the project would not have been possible without the continual support and guidance of our federal project officers, Penelope Pine and David Baugh.

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1

THE TAPE-TO-TAPE PROJECT 3
- Routine File Development and Table Production 3
- Special Tables and Files 4
- Data Linkage 5
- Methodology Development 6
- Analysis 7
- Management 7

DATA FILE CONSTRUCTION 11
- State Medicaid Management Information Systems 11
- Data Editing and Recoding 12
- Handling Large Data Files 15
- Content of Uniform Files 17
- Problem Areas 18
  - Mapping 18
  - Enrollee Identification Numbers 19
  - Medicare Crossover Enrollees 19
  - Turnover and Longitudinal Analyses 20
  - Spend-down and Patient Liability 20
  - Waiver Recipients 21
  - Summary 21

MEDICAID IN THE 1980s 23
- Eligibility 23
- Services 30
- Benefit Levels 30
- Waiver Services 34
- Reimbursement 35

FINDINGS 37
- Trends in Enrollment, Utilization, and Expenditures in Tape-to-Tape States 37
- Overview of Project Studies 48
  - Acquired Immune Deficiency Syndrome (AIDS) 51
  - Other Disability Issues 52
  - Long Term Care 53
  - Maternal and Child Health 55
  - Reimbursement and Services 57

CONCLUSIONS AND RECOMMENDATIONS 61
- Expanding the Tape-to-Tape Approach to Other States 61

REFERENCES 63

APPENDIX I -- Data Element Lists 66

APPENDIX II -- Tables 78

LIST OF EXHIBITS

1. Topics of Studies Under the Third Tape-to-Tape Contract. 8

2. State Files Used to Create Claims files 1985-1988. 13

3. Vendor Hardware/Software Systems for Current Tape-to-Tape Contract . 14

4. Number of Tapes and Records Acquired from the States to Create 1988 Uniform Files by Type of Data. 16

5. Changes in Maximum AFDC Benefits for a Three-Person Family by State, 1970 to 1989 24

6. SSI Benefit Level for a Disabled Individual Living Independently and Medically Needy Protected Income Level for One-Person Family, 1989 . 27

7. Twenty-One Groups of Services which may be Covered by Medicaid . . . 31

8. Mandatory and Optional Services by Eligibility Group 33

LIST OF FIGURES

1. Medicaid Total Enrollees by State Tape-to-Tape States 1980-1988 (thousands). 38

2. Medicid Enrollment Groups by State Tape-to-Tape States 1980-1988 (thousands). 39

3. Adjusted Hospital Discharge per 1,000 Medicaid Enrollees Tape-to-Tape States. 42

4. Adjusted Hospital Days per 1,000 Medicaid Enrollees for Non Crossovers Tape-to-Tape States 1980-1988 43

5. Adjusted Physician Visit Rates per Enrollee Non Crossovers Tape-to-Tape States, 1985 and 1988 45

6. Percent of Aged Enrollees with a Nursing Home Stay Tape-to-Tape States, 1981 and 1988. 46

7. Expenditures per Person Year AFDC Enrollee Tape-to-Tape States, 1980 and 1988. 47

8. Nursing Home Expenditures per Person Year for Aged Enrollees Tape-to-Tape States 1980-1988. 49

9. Adjusted Total Expenditures per Person Year Medicaid Enrollees Tape-to-Tape States 1980-1988. 50

EXECUTIVE SUMMARY

This report presents an overview of the activities and findings of the Medicaid Tape-to-Tape: Research and Data Analysis project. This project was initiated in April 1986 and continued through March 1991. In that period, SysteMetrics received raw claims, enrollment, and provider files from four states -- California, Georgia, Michigan, and Tennessee -- for service dates in calendar years 1985-1988. We processed those raw files into uniform analysis files, and performed numerous other analytic activities. Two other states -- New York and Utah -- participated in the project on a more limited basis.

The first section of this report describes the project organization and the major project activities. The next section describes the methodology for creating analysis files and the major issues and problems with that process. In particular, we provide substantial detail on the sources of data and data problems. A third section presents a brief description of Medicaid in the 1980s, to provide a context for the project and analyses. Obviously, given the complexity of Medicaid, this can be only a cursory overview. This is followed by a section on findings.

The findings present an overview of trends in key measures of enrollment, utilization, and expenditures in the 1980s in Tape-to-Tape states. We found that the number of AFDC-related children and adults climbed dramatically in the two smaller states, Georgia and Tennessee, primarily due to expanded eligibility for pregnant women and children in those states. In California and Michigan, such expansions did not have a great impact. The number of aged enrollees declined in all states while disabled enrollment grew. Such state differences were found for other key measures. For example, there were substantial differences in the growth in expenditures per person, except in California. Again, Georgia and Tennessee showed the greatest growth.

A final section provides a literature review of all of the studies conducted under the contract. There were about twenty such studies on a diverse range of topics including AIDS, disability, long term care, maternal and child health, and other reimbursement and service utilization issues.

In conclusion, in this Tape-to-Tape contract SysteMetrics, working collaboratively with HCFA staff, analyzed numerous critical health care issues that have Medicaid policy implications. The report identifies several possible areas of further investigation. As the health care needs of AIDS patients, the elderly, women and children, and other vulnerable groups continue to expand, studies such as these will help prepare HCFA for the decisions required to meet the health needs of low-income individuals.

THE TAPE-TO-TAPE PROJECT

The Tape-to-Tape project is an effort to acquire, reformat, and analyze detailed person-level data from several state Medicaid programs, beginning with calendar year 1980 dates of service. The first contract acquired data for 1980-82, the second contract for 1983-84, and this third contract for 1985-88. Five states participated in the first contract: California, Georgia, Michigan, New York, and Tennessee[1]. New York did not provide data during the second contract. New York has participated in the third contract on a more limited basis, providing files and analyses for particular studies only. Also, some data have been processed and analyzed for Utah (1986, with some preliminary analysis of earlier years).

Only limited data were available for analyses during the first contract. The analyses of the second contract emphasized descriptive studies in order to develop a greater sense of confidence in the quality of the data. The third contract has emphasized the refinement of methodologies used in the first two contracts and has included a greatly expanded array of research activities.

The project has included the following major categories of activities:

- Routine file development and table production.
- Special tables and files.
- Data linkage.
- Methodology development.
- Analysis.
- Management.

The activities of the project in each of these major categories are described briefly in the following section. More detail on file development and analyses are provided in subsequent sections.

Routine File Development and Table Production

Raw claims, eligibility, and provider files were obtained on a regular basis from four states over the course of the project. Circumstances within each state determined the timing of receipt and processing of files. For example, both Georgia and Michigan experienced changes in the data systems which produce the raw files; Georgia changed fiscal agents and Michigan changed its internal system. Consequently, several years of California and

[1]Data for Tennessee not available for 1982.

Tennessee data were processed before processing of Georgia and Michigan began. The processing schedule was also influenced by planned analyses.

During the course of the project it was possible to augment the data in the uniform claims files with data that had not been available in previous contracts. These included certain mental health claims in California (these "Short-Doyle" claims were obtained for 1982 through 1988 and processed into uniform files for 1987) and personal care and Early and Periodic Screening Diagnosis and Treatment (EPSDT) claims in Michigan (in 1988 only). We also began including HMO premium claims for Tennessee in 1985 and for Michigan in 1986.

Once uniform claims, eligibility, and provider files were created for a given state and year, an "early returns" file, a person-level file summarizing utilization and expenditures for the year, was also created for each state/year. This file is useful for many analyses because it contains many fewer records than the claims files. From this file, we routinely produce a set of "early returns tables" for each state/year.

The early returns tables are a set of basic program statistics on many different sub-populations within Medicaid. In the third Tape-to-Tape contract, we revised the set of tables, reducing the number of tables, and at the same time increasing somewhat the number of measures displayed in the tables.

Copies of the tables were sent to HCFA and the states. Along with each copy, we sent a specially-tailored state report describing the tables and factors affecting interpretation of the data for that particular state/year.

Special Tables and Files

A large number of special tables and files were also produced on an ad hoc basis throughout the project. These were produced for use by HCFA researchers and in response to requests outside the agency.

The following are only a few examples of the many files and tables that were produced:

- Distributional tables of expenditures.
- On-line diagnosis files.
- SAS files containing numbers from early returns tables.
- Files to be used in HCFA's evaluation of its capitation demonstrations.

- Tables comparing Tape-to-Tape data to the 2082 reports.
- Special procedure code files.
- End Stage Renal Disease tables.
- Files on optical disk and floppy disk for PC analysis.
- Files for the Urban Institute to be used in refining the TRIM model.
- Tables for CDC to be used in analyzing infant injuries.

Some of these files were installed at HCFA on the "Medicaid Workstation," a PC-based hardware/software package developed under the contract. This allows HCFA analysts to access smaller data files in a user-friendly environment.

Data Linkage

In addition to the data in the basic files, which all derived from state Medicaid Management Information Systems (MMIS), we obtained several other data sets in the course of the project and merged them with the uniform files at the individual record level. In some cases, these mergers were perform only for selected states or years. The contents of each merged file are documented in a "Medicaid Statistical Files Manual" (SysteMetrics, 1991). The following are examples of the merged data sets:

- Birth certificates for all births in October 1983 in California, Georgia, and Michigan.
- Death certificates (all 1980-88 data for California and Michigan).
- Data from HCFA's Medicare hospital discharge file (MEDPAR).
- Medicare/Medicaid Automated Certification System (MMACS) data.
- Data from the Social Security Administration (SSA) on SSI disabled cash assistance recipients.
- American Hospital Association (AHA) provider data (1985-88).
- Census data at the Zip code level for California (1985-88).

- Several linkages to Medicare enrollment data; toward the end of the project a methodology was developed to perform this merge routinely.

Methodology Development

Several intensive efforts were undertaken to refine the methodology for creating uniform files. We did a comprehensive investigation of new variables which could be added to the files that would be useful for analysis. One of the results was the addition of a flag indicating whether services on the "outpatient file," such as physician visits, were in-hospital or out-of-hospital. Ancillary and accommodation charge fields on the inpatient file were greatly expanded; long term care claims now show ancillary and subacute care services. A new variable on the enrollment file gives the actual capitation program to which the individual belongs, and another variable describes the type of plan (if any). Several new variables were also added to the provider file.

We also developed many additional quality control procedures. We now look at expenditure and recipient data at several early processing stages (the Very Early Returns) in an effort to find problems not apparent in screens of individual records or code values. We also compare monthly enrollment counts to counts from Social Security bulletins and the AFDC program. We routinely check counts of claims paid by date of service (short fall frequencies) which help us notice duplicate problems as well as missing tapes. Counts of records discarded and combined are routinely reported in a standard memo format.

Early in the project, Tape-to-Tape data for the early 1980s were extensively compared to other sources of Medicaid data (Klingman and Flood, 1987). We found that, in general, the recipient and expenditures counts for Tape-to-Tape were comparable to HCFA 2082 data by state/year when totals were compared, but that there were often large differences by type of service or enrollment group. This was usually due to classification differences. In comparing to total expenditures from HCFA-64 reports, we found that expenditures reported in Tape-to-Tape were usually lower than those in the HCFA-64 data. This is because there are often groups of people (e.g., those in HMOs) or service types which are omitted from the state MMIS systems used to create Tape-to-Tape files.

The discovery of these "gaps" led to a special study whose purpose was to identify all major gaps, quantify the size in terms of number of people, and recommend ways to obtain additional files and merge them with the routine MMIS data (Andrews and Howell, 1990). The result was that now several files ("Short-Doyle," personal care, HMO premiums, and EPSDT files) are obtained in some states and routinely merged with the MMIS data. On the other hand, the study showed that many of the gaps will remain in the Tape-to-Tape files. For example, for the near future it does not appear feasible to obtain service-specific data on HMO enrollees.

Another study was an investigation of the quality of the data in the Tape-to-Tape files (O'Brien, et al., 1990). In this study we examined univariate and bivariate distributions of variables, and in some cases compared these to external data sources, in order to identify any anomalies in the Tape-to-Tape data. Special emphasis was placed on the investigation of the quality of data on Medicaid/Medicare crossovers. We discovered that, for the most part, the crossover data are of limited usefulness, especially for inpatient stays.

A final methodology development task was the investigation of the usefulness of data from Utah for inclusion in the Tape-to-Tape data base. First, we obtained data from Utah from the early 1980s that had been used for another HCFA research project. We found that it was difficult to create uniform files from those files, which were in two different formats, because there was insufficient documentation of the content and coding of the files. Given that the data were old, it was difficult to obtain complete documentation from the State. Instead of pursuing the recoding of the old data, we obtained Utah data from the HCFA MEDSTAT project (currently called MSIS). These data, for 1986 dates of service only, were recoded into Tape-to-Tape format, used to create early returns tables, and used in one small analysis of 209(b) states (Ellwood, 1991). This latter methodology development project using Utah data is closely tied to the fourth Tape-to-Tape contract, only recently underway, which is investigating the possibility of using MSIS data for Medicaid research.

Analysis

There was an extensive analysis component to the third Tape-to-Tape project. A total of twenty-one different research studies were completed in the course of the project. The topics of those studies are shown in Exhibit 1. The findings from the studies are reviewed in a later section of this report.

All of the studies were performed collaboratively between HCFA Office of Research staff and contractor staff. At the time of this writing, results from five of the studies have been published in journals including *Medical Care*, the *Archives of Internal Medicine*, and the *HCFA Review*. Many of these topic areas have also been presented at annual meetings such as the American Public Health Association, the National Association of Welfare Research and Statistics, and the Public Health Conference on Research and Statistics.

Management

There were many ongoing management activities which were important to the success of the project. Because there were so many tasks using over twenty staff on a regular basis, it was important to carefully track the timing and budgets for each task separately. Routine, quarterly management meetings were used to review the status of each task.

Exhibit 1

Topics of Studies Under the Third Tape-to-Tape Contract

- Medicaid Spend-down in Nursing Homes
- Capitation Under Medicaid
- The Chronically Mentally Ill
- AIDS (three studies)
- Medicaid Providers
- Maternal and Infant Care (three studies)
- The Medicaid Disabled
- High Cost Procedures
- Hospitalization for Children
- The SSI Aged
- Hospital Reimbursement Changes (two studies)
- Volume of Physician Services
- Medicare and Medicaid Nursing Home Expenditures
- Use and Expenditures for Prescription Drugs
- Hip Fracture and the Elderly
- SSI Recipients in a 209b State

In addition to routine management, we had several special management tasks. Perhaps the most important of these was state liaison. Since the provision of data was voluntary, it was especially important to maintain good relationships with the states. Each state, including New York and Utah, was visited at least once during the project. The purpose of these visits was to renew relationships with State staff, provide feedback on the project results, and learn about the State programs and data systems. Telephone contact with the participating states continued throughout the project on a regular, sometimes daily, basis.

Another management activity was the development of notebooks containing program characteristics for each state from 1980 through 1988. The data were obtained from a variety of sources such as the Intergovernmental Health Policy Project, HCFA, and the National Governors' Association. These were used by analysts when interpreting the findings of the various studies.

Finally, special data processing management activities included development of extensive documentation for each data file and the careful tracking of the location and contents of the thousands of tapes which were received and produced for the contract. The most important piece of documentation is the project's Administrative Manual (Cherlow, Herz, Dodds, and Miller, 1991). This is a multi-volume series of loose-leaf notebooks which are updated regularly. Each variable is described in terms of coding, problems with data, and the source of the data in the raw files. Another important piece of documentation is the Tape-to-Tape Access Manual (Dodds, Blake, and Miller, 1990). This document describes the data set to potential users and provides greatly-abbreviated information on coding and data problems.

DATA FILE CONSTRUCTION

State Medicaid Management Information Systems

As of 1988, all but five states across the country had certified Medicaid Management Information Systems (MMIS). The MMISs maintain information on beneficiaries and providers, process claims, generate budgetary and statistical reports, and identify abusive or fraudulent providers or beneficiaries. Although there are federal requirements for minimum claims and reporting performance standards for the MMISs, the actual state systems are far from uniform.

The MMIS data files used to create uniform Tape-to-Tape files were provider files, eligibility or enrollment files, and claims files. Provider files generally include information captured at the provider's enrollment. The purposes of these files are to verify provider enrollment and to reflect the current name and address for reimbursement and correspondence purposes. These files are generally not purged, and much of the information on them (such as provider specialty and number of beds) is not verified. Not only do the structure and contents of provider files vary across states, but the methods of assigning provider identification (ID) numbers are so different that defining each unique provider is a difficult task.

The purpose of MMIS enrollment files is to verify Medicaid eligibility and benefits. Enrollment records include the basis of eligibility (or eligibility group) and maintenance assistance status of the enrollee for each month, as well as case number, age, sex, and participation in capitated plans. These files are purged periodically, and it is important for the contractor to obtain files before records are purged. However, since enrollment is sometimes added retroactively, it is often desirable to wait six months to make certain most retroactive enrollment has been added.

The enrollment files are structured differently in each state. California has one record per Medicaid ID number, with rolling, repeating 18-month enrollment periods. Michigan and Georgia have multiple record types for each enrollee with repeating span dates for enrollment periods. All states update enrollee demographic information on the header portion of the record by overlaying it. Tennessee routinely overlays the cash basis of enrollment instead of carrying it in span date segments, so it is necessary to obtain monthly files from Tennessee in order to correctly assign enrollment.

MMIS claims files are the largest files. These too vary considerably in the amount of detail they capture. In general, claims data are in different configurations for different claim types. (That is, acute inpatient hospital, outpatient hospital, physician, EPSDT, psychiatric hospital, and long term care claims may all be on different types of records.) The claims show the service (or "procedure") provided, identify the recipient and provider, give dates of service and payment, list primary (and sometimes secondary)

diagnosis, show amounts paid by the patient, Medicaid, Medicare, and other third party payers, and present charges for the services rendered. They also contain administrative information which is largely irrelevant to research files. Often crossover claims (claims paid first by Medicare) are on different claims files than claims paid by Medicaid only; crossover claims often contain less detail and are frequently not edited by Medicaid.

From some Tape-to-Tape states (Michigan and New York), SysteMetrics has at times received payment history files, in which adjustments are combined with the original claims to show only the most recent status of the claim. More commonly, the project receives monthly payment files, which do not combine adjustments with original claims. Each state seems to follow its own logic in handling adjustments; some "back out" all original information and then insert a new claim, while others only correct individual data elements from the original claims.

States may operate their own MMISs, but most (37 states) rely on fiscal agents to process at least some kinds of claims. (Of the Tape-to-Tape states, only Michigan processes its own claims.) Unfortunately, even when different states use the same fiscal agent, as many do, the structure and contents of files can be very different. Also, each time a state changes processors, its MMIS system changes, often dramatically. Because of timing of data requests, state data purging cycles, and conversions in fiscal agents, the raw MMIS data from the Tape-to-Tape states are often reformatted by the current vendor from data originally processed by the previous fiscal agent. Under this circumstance, even state personnel are sometimes not familiar with the contents of the files and the meaning of all coding conventions. Exhibit 2 shows which processors were used by Tape-to-Tape states during 1985-88.

As shown in Exhibit 3, all the Tape-To-Tape states had different computer systems for their MMIS data base for during 1988. SysteMetrics negotiated with the states to supply IBM-compatible data, so that these differences caused minimal problems. Michigan, with its Honeywell System, was the only state to have non-IBM-compatible tapes. A consultant was hired under the contract to develop and install computer programs to extract and convert Michigan data on a routine basis.

Data Editing and Recoding

Tape-to-Tape files have always required considerable editing. Missing or out-of-range codes are generally 9-filled. Another type of editing involves deleting inappropriate records. Records have been deleted from the Tape-to-Tape uniform files for these reasons:

- They show no Medicaid amount paid. However, state-only and federal-only claims are usually retained, unless only random claims from a program are present on the MMIS.

Exhibit 2

State Files Used to Create Claims Files
1985-1988

	California			Georgia			Michigan			Tennessee		
Year	Processor	S/P*	Dates	Processor	S/P*	Dates	Processor	S/P*	Dates	Processor	S/P*	Dates
1985	CSC	P	1/85-9/87	TCC (Converted by EDS)	P	1/85-6/87	Reg: State LTC: State	S P	1985 1985-1987	TCC	P	1/85-9/87
1986	CSC	P	1/85-9/87	TCC (Converted by EDS)	P	1/85-6/87	Reg: State	S	1986-1989	TCC	P	1/85-9/87
1987	CSC**	P	1/87-9/89	TCC (Converted by EDS) EDS	P P	1/87-6/87 7/87-9/89	Reg: State	S	1986-1989	TCC	P	1/87-9/88
1988	CSC**	P	1/87-9/89	EDS	P	7/87-9/89	Reg: State	S	1986-1989	TCC	P	1/88-9/89

*S/P = Dates based on Dates of Service (S) or Date of Payment (P).

**EDS starting 4/4/88, but format did not change.

Date: May 30, 1990

Exhibit 3

Vendor Hardware/Software Systems
Tape-To-Tape Contract
1988

	California	Georgia	Michigan	New York*	Tennessee
Computer System	IBM	IBM	Honeywell	IBM	IBM
Language	Cobol	Cobol	Cobol	Cobol	Cobol
Claims Processor	EDS	EDS	State	CSC	TCC
Tape Density	6250 BPI	3480 Cartr.	6250 BPI	6250 BPI	6250 BPI
Character Set	EBCDIC	EBCDIC	EBCDIC	EBCDIC	EBCDIC
Labeled	Yes	Yes	Yes	Yes	Yes
Record Format	Variable	Variable	Variable	Fixed	Variable
Blocksize	21998	32760	10000	32640	32700
Record Length	270-7330	<=9846	<=155	384	<=4258
Packed Fields	Yes	Yes	No	No	Yes
Binary Fields	Yes	Yes	No	No	No
Translated by State	No	No	Yes	No	No

*New York did not contribute raw data to Tape-To-Tape in 1983-1988, but this represents its current files.

- They are multiple iterations of a single claim, or duplicates of paid claims. By matching claims with the same recipient identification number, provider identification number, service dates, and internal control numbers, we are able to determine the correct final adjudication status of a claim and to identify duplicate claims.

- They are for service dates outside the file year, except in the case of inpatient claims which are combined into stay records and kept in the file based on discharge date.

- For the Early Returns file, claims are deleted for enrollees who have no enrollment information.

- Inactive providers who have no paid claims in the year are deleted.

Another type of editing involves "correcting" or changing raw data. At the start of the Tape-to-Tape project, we thought that correcting data would be both unnecessary and impossible. By the end of the second contract, however, we had determined that "corrections" could be made to produce more complete and more accurate data. For example, if the quantity field on a paid claim for a visit is missing, we use guidelines developed for situations in which the quantity of visits can safely be assigned as one. Occasionally, more complicated data fields (including procedure code) can be correctly imputed. At all times, great care was taken not to impute any data where the imputation is less than certain.

In creating the uniform files, we must reconcile different coding systems. This "mapping" or crosswalk activity involves both coding variables (e.g., sex, procedure codes) and selecting appropriate data elements. Even straightforward maps (e.g., from the states' codes for sex to the uniform ones) cannot be done simply from the file documentation; a careful review of actual data is required because often the documentation does not match the data.

Handling Large Data Files

The volume of data processed in the Tape-To-Tape project is truly enormous (see Exhibit 4). Processing this massive volume of data requires special facilities and techniques to assure that unnecessarily costly and time-consuming steps are avoided. The three most important factors in efficiently processing these large data files are:

- Careful design of processing stream.

- Selection of an efficient programming language.

Exhibit 4

Number of Tapes and Records* Acquired from the States
to Create 1988 Uniform Files by Type of Data

	Number of Tapes	Number of Records	File Type	Dates Covered By File Used
CLAIMS				
California	205	92,604,667	Payment	1/88-9/89
Georgia	132**	15,179,658	Payment	1/88-9/89
Michigan	142	158,934,086	Service	1/86-12/89***
Tennessee	170	34,514,310	Payment	1/88-9/89
ELIGIBILITY				
California	9	5,425,815	History	Created 6/89
Georgia	5**	700,477	History	Created 4/90
Michigan	32	5,188,135	History	Created 11/89
Tennessee	42	7,819,515	History	8 Monthly Files
PROVIDER				
California	2	292,400	History	Created 6/89
Georgia	1**	4,711	History	Created 4/90
Michigan	2	143,204	History	Created 4/90
Tennessee	1	40,039	History	Created 6/89
TOTAL				
California	216	98,322,882		
Georgia	138**	15,884,846		
Michigan	314	164,202,425		
Tennessee	213	42,373,864		
GRAND TOTAL	881	320,784,017		

*In some states there is more than one record per claim.
**Georgia files are received on 3480 cartridges.
***Michigan submitted 1986-1988 data in a single large data set.

The largest files to be processed are the claims files. For Tape-to-Tape, the first pass through the data has been designed to accomplish as much of the claims processing as possible. It utilizes an exception file for records which fail important edits so that only problem records need to be reprocessed.

The remaining passes through the data involve checking for duplicates, adjusting data as necessary, creating stay records for inpatient claims, and performing remaining edits and modifications necessary to create uniform files. These steps also require thorough testing to minimize passes through the data and maximize the quality of the output data.

The choice of a computer language is also critical. With such a large volume of data, the execution time is the most critical factor in selecting a language. For the large-scale processing, we use PL/I. For processing the smaller files, where we need more analytical tools, the SAS language is used. We also employ SAS in the quality control process.

Content of Uniform Files

Over the course of the Tape-to-Tape contracts, SysteMetrics has devoted significant resources to the creation of the uniform files. Many issues which could have been ignored in the interest of expediency have instead been given our full attention, and the results have been, for the most part, high-quality and well-understood data.

The Tape-To-Tape uniform files -- one each for eligibility, claims, and providers -- contain standard data sets which are designed to capture as much research-oriented detail as possible considering the diverse source files. Each enrollment record has a header section with data about the enrollee which do not change during the course of the year, followed by 12 segments containing data specific to each month. The claims file headers include data relevant to all claim types, followed by specific segments, varying in size, depending on type of claim. The provider records are developed by adding several items (e.g., Medicaid amount paid) from the claims files, and ownership and number of beds from the AHA files. The Early Returns files, one for each state and calendar year, include summary utilization, expenditure, and enrollment data for each enrollee. Data element lists and the availability of data elements by state for the Tape-To-Tape uniform and Early Returns files (as presently constituted) are presented in Appendix I.

We have attempted to minimize the addition of new variables to the uniform files. Since the files are kept in fixed-length format, the addition of variables leads to expanded record length and file size. Also, changes in formats make longitudinal analyses across years more difficult for analysts and programmers. For the same reason, changes in definitions and coding have been minimized. The Administrative Manual (Cherlow, et al., 1991) describes the changes we have incorporated in the files over time.

Problem Areas

Mapping

Certain variables have been particularly difficult to reconcile across state data systems. These include eligibility group, category of service, and procedures (or services). We have retained the state-specific eligibility group and procedure codes as a partial solution to this problem, in addition to developing uniform codes.

Since 1980, the Tape-To-Tape project has used almost the same groups used by HCFA for the 2082 report for our "uniform eligibility groups." These coverage groups refer to the maintenance assistance status (MAS) of the individual and the individual's basis of eligibility (BOE). The MAS indicates whether or not the individual is eligible for maintenance assistance payments. The BOE refers to the individual's categorical relationship to Medicaid. The BOE of most Medicaid enrollees relates to either AFDC or SSI, i.e., they are in an AFDC-like household or they are aged, blind or disabled. In addition, there is an "other" BOE group which generally covers children in two-parent households.

The only difference between Tape-to-Tape and 2082 eligibility groups has been that the former uses a greater number of uniform groups in order to separately count Ribicoff children, Title IV-E and other foster children, and AFDC-Unemployed Parent children and adults. Tape-to-Tape also combines the blind and disabled (starting in 1983). This difference has not caused any problems since the additional groups used by Tape-to-Tape are merely subsets of 2082 uniform groups. As a result, we have been able to make some comparisons to the 2082 of our counts of recipients and expenditures by coverage group for the Tape-to-Tape states and generally present eligibility data in a format familiar to researchers and policymakers.

A category of service is assigned to each claim on the Tape-To-Tape uniform claims files. The assignment depends on the type of provider, the type of service, and occasionally, the age of the recipient. In general, the service categories Tape-to-Tape uses also match those on the 2082 reports. However, the Tape-to-Tape categories differ in several respects:

- We eliminated the family planning category for Tape-to-Tape because it was too difficult to define uniformly across states.
- We added a category for inpatient psychiatric care in psychiatric facilities for patients aged 22-64.
- We added separate categories of service for waiver services, premium payments, case management fees, and state-only services.

In addition to these differences, Tape-to-Tape defines lab, x-ray, and other practitioner categories somewhat differently from the 2082 instructions. It should be noted that, in our experience, states have not always carefully followed the 2082 instructions for defining categories of service.

Enrollee Identification Numbers

In order to perform person-based longitudinal research and to properly account for expenditures and services, it is necessary that each enrollee have one unique identification number in all files over time. In states where this does not occur, it is important to construct a system in which each enrollee is assigned a master number that links together all other numbers they have ever had.

In Tennessee, Michigan, and Georgia, enrollee identification numbers are unique numbers assigned either sequentially or in other random ways. In those states, once a number has been used, it is never supposed to be assigned to anyone else.

California is the only state in previous Tape-to-Tape projects which did not assign unique numbers to its enrollees. From 1980 to 1988 approximately 500,000 California enrollees per year have more than one individual identification number. SysteMetrics developed a complicated set of rules and a job stream to associate those enrollees with multiple numbers, both within and between years. The basic philosophy was to put together only those numbers which we were reasonably sure belonged to the same people in order to minimize the number of false positives. The social security number, date of birth, sex, and name were used in this process.

Medicare Crossover Enrollees

Most aged Medicaid enrollees and many disabled Medicaid enrollees are also eligible for the Medicare program. It is important to be able to identify persons who are enrolled in both programs since the availability of Medicare coverage can substantially reduce the costs incurred by Medicaid as the payor of last resort. However, identifying dual enrollees, or crossovers as they are often called, has not proved to be an easy task.

Since 1984 Tape-to-Tape has generally identified as crossovers those recipients who have a claim jointly processed by the Medicare and Medicaid programs. This definition for crossovers means we undercount the true number of dual enrollees in Medicaid and Medicare since we exclude two groups of dual enrollees:

- Those who had claims processed under only one program (either Medicaid or Medicare) during the year.
- Those who received no services during the year paid for by either Medicaid or Medicare.

These two excluded groups are believed to be small.

In recent years, Tape-to-Tape has been successful in making some links to various Medicare files. For example, the linkage of Tape-to-Tape to the 100 percent MEDPAR file has been used to create nursing home stay records over the 1984-1985 time period.

Turnover and Longitudinal Analyses

The Tape-to-Tape data set has been the first truly longitudinal file available for studying the enrollment, utilization and expenditure patterns of Medicaid enrollees. Over the last few years, researchers have begun to exploit the longitudinal potential of nine years of data.

Some enrollees go on and off the program several times during a year. This turnover dynamic greatly complicates analysis of Medicaid program data. Generally, Tape-to-Tape analysis has shown turnover to be greatest among AFDC children and adults receiving cash assistance, as well as Ribicoff children. Turnover is also frequent among all groups of the non-institutionalized medically needy, and is lowest among the aged, blind, and disabled receiving SSI cash assistance. Researchers need to keep these differences in turnover patterns in mind when making comparisons among the various eligibility groups.

Spend-down and Patient Liability

The "spend-down" concept is one of the most confusing aspects of the Medicaid program to many people. The term "spend-down" refers both to the amount of income which medically needy or institutionalized Medicaid enrollees must contribute to the cost of their medical care and to the depletion of assets prior to the application for medical assistance under Medicaid.

Since 1980 the Tape-to-Tape eligibility files have included, where available, data on income spend-down. However, the extent of income spend-down data varies significantly among Tape-to-Tape states. California spend-down amounts are available both for persons who are institutionalized and persons who are spending-down each month in the community. Income spend-down amounts are only available in Michigan for those who spend-down in hospitals or nursing homes. Georgia and Tennessee only have spend-down data for persons in nursing homes.

On the claims files, patient liability (the amount the patient is supposed to contribute toward payment for the service) is captured where present. Particularly on long term care claims, patient liability amounts frequently affect the Medicaid amount paid significantly.

Although the Tape-to-Tape database does not include information on asset spend-down per se, the Michigan Tape-to-Tape data were recently used to estimate the proportion of Medicaid nursing home recipients who were asset spend-downers and to estimate the amount of their Medicaid expenditures.

Waiver Recipients

The number of recipients treated under waiver programs has been growing in recent years. Repeatedly, researchers have inquired about the potential of Tape-to-Tape to analyze the Medicaid utilization patterns of waiver recipients. Unfortunately, there are sometimes problems with identifying and tracking waiver recipients. Areas of difficulty include:

- Claims may be missing from the MMIS. This is often the case for waiver services not normally covered by Medicaid.
- Waiver recipients may not be identified on the enrollment file.
- Most new programs have experienced time lags in implementation. This may lead to data quality and completeness problems, especially in the early years.

Because of these problems, it has not been possible to create a uniform data set with records on all waiver services in all Tape-to-Tape states.

Summary

This section has provided only a brief overview of some of the most difficult problem areas encountered in developing uniform Medicaid research files. In spite of these difficulties, the cross-state data can be used for most of the important research topics on the Medicaid program. It is very important, however, for researchers to remain aware of these potential limitations when interpreting findings.

MEDICAID IN THE 1980s

When SysteMetrics first submitted a proposal to HCFA ten years ago to begin work on the Tape-to-Tape project, we could not have imagined how much more complicated Medicaid would become in the decade of the 1980s. Starting with the initial OBRA legislation in 1981, states were given greater flexibility in selecting who would qualify for Medicaid benefits. Almost every year thereafter, additional options were provided to states to target their Medicaid programs. In the area of reimbursement policy, all Tape-to-Tape states changed their hospital reimbursement systems during the 1980s. This, combined with a major change in Medicare hospital reimbursement, altered the incentives to hospitalize patients.

By 1991, the Medicaid program looked vastly different than it had in 1980. States have both more mandated groups and more optional groups. Over the decade program expenditures continued to increase. In FY 1980, Medicaid expenditures were $20.3 billion. Preliminary estimates for FY 1990 are in the range of $60 billion.

Eligibility

Deciding who will be eligible is one of the fundamental policy decisions states make regarding their Medicaid programs. Although the federal government has increasingly mandated certain coverage groups, there is still substantial flexibility to states in establishing eligibility policy. The AFDC and SSI cash assistance programs continue to account for the vast majority of Medicaid recipients, and these programs vary considerably from state to state.

From the beginning of Medicaid, states have been required to extend coverage to all families and children receiving AFDC cash assistance. However, since states exercise almost total flexibility as to where they set the income eligibility levels for AFDC, the program varies dramatically from state to state with regard to its coverage of the low-income population. As shown in Exhibit 5, the maximum benefit levels for AFDC in FY 1989 (for the continental United States) ranged from $118 a month for a family of three in Alabama to $663 a month in California. It is also important to note that AFDC income eligibility levels have actually experienced a substantial decline since the Medicaid program began, if constant (or real) dollar calculations are used. The median state AFDC benefit level in 1989 was only at 46 percent of the federal poverty level.

Among the Tape-to-Tape states, the AFDC maximum benefit levels ranged from $173 monthly for a family of three in Tennessee to the previously cited level of $663 in California. California, Michigan, and New York have covered the optional group of AFDC-U families throughout the Tape-to-Tape data period, whereas Georgia and Tennessee will be initiating the newly mandated coverage for this group in 1990.

Exhibit 5

Changes in Maximum AFDC Benefits for a Three-Person Family
By State, 1970 to 1989
(*Tape-to-Tape States)

	July 1970 Benefit (In Dollars)	January 1989 Benefit (In Dollars)	Percent Change 1970-1989 (Constant Dollars)	Percent of 1988 Poverty Level
Alabama	$ 65	$118	-42%	15%
Alaska	$328	$809	-21%	83%
Arizona	$138	$293	-32%	37%
Arkansas	$ 89	$204	-26%	26%
*California	$186	$663	+15%	84%
Colorado	$193	$356	-41%	45%
Connecticut	$283	$623	-29%	79%
Delaware	$160	$333	-33%	42%
District of Columbia	$195	$393	-35%	50%
Florida	$114	$287	-19%	37%
*Georgia	$107	$270	-19%	34%
Hawaii	$226	$557	-21%	62%
Idaho	$211	$305	-54%	39%
Illinois	$232	$342	-53%	44%
Indiana	$120	$288	-23%	37%
Iowa	$201	$394	-37%	50%
Kansas	$222	$427	-38%	54%
Kentucky	$147	$218	-52%	28%
Louisiana	$ 88	$190	-31%	24%
Maine	$135	$438	+4%	56%
Maryland	$162	$377	-25%	48%
Massachusetts	$268	$539	-35%	69%
*Michigan a/	$219	$513	-25%	65%
Minnesota	$256	$532	-33%	68%
Mississippi	$ 56	$120	-31%	15%
Missouri	$104	$285	-12%	36%
Montana	$202	$359	-43%	46%
Nebraska	$171	$364	-32%	46%
Nevada	$121	$330	-12%	42%
New Hampshire	$262	$496	-39%	63%
New Jersey	$302	$424	-55%	54%
New Mexico	$149	$264	-43%	34%
*New York b/	$279	$539	-38%	69%
North Carolina	$145	$266	-41%	34%
North Dakota	$213	$386	-42%	49%
Ohio	$161	$321	-36%	41%
Oklahoma	$152	$325	-31%	41%
Oregon	$184	$420	-27%	53%
Pennsylvania	$265	$402	-51%	51%
Rhode Island	$229	$517	-27%	66%
South Carolina	$ 85	$206	-22%	26%
South Dakota	$264	$366	-55%	47%
*Tennessee	$112	$173	-50%	22%

Exhibit 5 (Continued)

Changes in Maximum AFDC Benefits for a Three-Person Family by State, 1970 to 1989

	July 1970 Benefit (In Dollars)	January 1989 Benefit (In Dollars)	Percent Change 1970-1989 (Constant Dollars)	Percent of 1988 Poverty Level
Texas	$148	$184	-60%	23%
Utah	$175	$376	-31%	48%
Vermont	$267	$629	-24%	80%
Virginia	$225	$354	-49%	45%
Washington	$258	$492	-39%	63%
West Virginia	$114	$249	-30%	32%
Wisconsin	$184	$517	-10%	66%
Wyoming	$213	$360	-46%	46%
Median State c/	$184	$360	-37%	46%

a. Michigan data are for Detroit only.
b. New York data are for New York City only.
c. Among 50 states and the District of Columbia.

Source: *Background Material and Data on Programs within the Jurisdiction of the Committee on Ways and Means* (March, 1989).

The second major eligibility group under Medicaid involves persons qualifying through the SSI program, the major welfare program of cash assistance for the aged, blind, and disabled. In FY 1988, about 20 percent of Medicaid recipients were eligible for Medicaid because they were SSI recipients. Eligibility for SSI varies considerably since just over half the states provide supplementary payments (SSP) to the minimum federal payment level for SSI recipients. As shown in Exhibit 6, about half the states in 1989 used the federal payment of $368 a month for a disabled individual living independently, which was only 68 percent of the federal poverty level for that year. The state supplementation levels to the federal minimum ranged from only a few dollars in several states to $234 a month in California.

One of the most important decisions a state makes with regard to eligibility policy is whether to cover any groups as medically needy. In FY 1988, about 14 percent of recipients qualified through the medically needy provisions. By including medically needy coverage for a group, a state opens up Medicaid to persons of any income level, assuming their medical bills are large enough, and they fall into one of the categories covered.

Prior to the passage of OBRA 1981, states were required to cover all the groups which they covered for cash assistance in their medically needy programs, i.e., the aged, the blind, the disabled, and AFDC children and adults. With OBRA 1981, however, states were given the option of having "targeted" medically needy programs. This targeted medically needy provision has expanded state flexibility for Medicaid eligibility. For several years prior to OBRA 81, the number of states with medically needy programs had been fairly constant at about 30, whereas in 1989 the number has expanded to 36.

Exhibit 6 also shows the income standards used for medically needy eligibility for a single individual. Like the income eligibility levels for AFDC and SSI/SSP, there is an enormous range across the states. In FY 1989 the median state medically needy level for a one person family was $382, 71 percent of the federal poverty level.

Among the Tape-to-Tape states, California, Michigan and New York have had full medically needy programs throughout the duration of the data set, while Georgia and Tennessee have each had periods without any medically needy coverage. Currently, Georgia has only a limited medically needy program covering children and pregnant women, while Tennessee reinstituted a full program in 1986.

Another 13 percent of Medicaid recipients in FY 1989 came from a long list of other mandatory and optional groups. There is no straightforward way to explain all these groups since some of the categories are overlapping, and many groups cover only small numbers of people.

Exhibit 6

SSI Benefit Level for a Disabled Individual Living Independently and Medically Needy Protected Income Level for One-Person Family, 1989

State	SSI Benefit Level	% of Poverty Level	Medically Needy Level	% of Poverty Level
Alabama	$368	69%	--	--
Alaska	$683	127%	--	--
Arkansas	$368	68%	$108	20%
California	$602	112%	$600	100%
Colorado	$372	69%	--	--
Connecticut	$752*	140%	$452	84%
Delaware	$368	68%	--	--
Dist. of Columbia	$383	71%	$391	73%
Florida	$368	68%	$300	56%
Georgia	$368	68%	--	--
Hawaii	$373	69%	$357	66%
Idaho	$441	82%	--	--
Illinois	NA	--	$267	50%
Indiana	$368	68%	NA**	NA
Iowa	$368	68%	$466	87%
Kansas	$368	68%	$368	68%
Kentucky	$368	68%	$217	40%
Louisiana	$368	68%	$100	19%
Maine	$378	70%	$400	74%
Maryland	$368	68%	$375	70%
Massachusetts	$483	90%	$483	90%
Michigan	$399	74%	$391	73%
Minnesota	$403	75%	$466	87%
Mississippi	$368	68%	--	--
Missouri	$368	68%	NA**	NA
Montana	$368	68%	$368	68%
Nebraska	$406	75%	$392	73%
Nevada	$478	89%	--	--

Exhibit 6 (Continued)

SSI Benefit Level for a Disabled Individual Living Independently and Medically Needy Protected Income Level for One-Person Family, 1989

State	SSI Benefit Level	% of Poverty Level	Medically Needy Level	% of Poverty Level
New Hampshire	$395	73%	$382	71%
New Jersey	$400	74%	$350	65%
New Mexico	$368	68%	--	--
New York	$454	84%	$459	84%
North Carolina	$368	68%	$242	45%
North Dakota	$368	68%	$345	64%
Ohio	$368	68%	NA**	NA
Oklahoma	$432	80%	$275	51%
Oregon	$370	69%	$385	72%
Pennsylvania	$401	75%	$408	76%
Rhode Island	$430	80%	$550	102%
South Carolina	$368	68%	--	--
South Dakota	$383	71%	--	--
Tennessee	$368	68%	$175	33%
Texas	$368	68%	--	--
Utah	$377	70%	$337	63%
Vermont	$429	80%	$733	136%
Virginia	$368	68%	$250	46%
Washington	$396	74%	$396	74%
West Virginia	$368	88%	$200	37%
Wisconsin	$471	90%	$471	88%
Wyoming	$388	72%	--	--
Poverty Level	$538			

Source: *Characteristics of State Assistance Programs for SSI Recipients: January 1989*, Social Security Administration, SSA Pub. No. 17-002, and *Medicaid Eligibility: Selected Program Characteristics, September 1989* National Governors' Association, March, 1990.

NA: Not Available
*Maximum budget amount.
**These states use an income spend-down provision in determining Medicaid eligibility for the disabled because of their 209(b) status. However, they do not have medically needy levels per se.

Probably the most significant optional coverage group available to states prior to 1986 involved the "Ribicoff child" group. Generally, Ribicoff children are those living in two-parent families or children who do not otherwise meet the AFDC program definition of a "dependent" child. Full Ribicoff coverage has always been regarded as an important option for a state since it potentially opens up Medicaid eligibility to all poor children, regardless of their family structure. Currently, all states are required to extend full Ribicoff coverage to children born after September, 1983. Thus, every state now has Ribicoff coverage for children to age seven. California, Michigan and New York among the Tape-to-Tape states have always included full Ribicoff coverage for children of all ages, while Georgia and Tennessee expanded to include this group in recent years.

Over the years, one of the most persistent criticisms of the Medicaid program was the restrictive income eligibility standards which were used because of the program's strong ties to the AFDC and SSI programs. The passage of OBRA 1986 brought a new era in Medicaid eligibility. States now had the option to test income eligibility for Medicaid for some groups using the poverty standard. Currently, states are mandated to cover pregnant women and children up to age six in families with incomes up to 133 percent of the poverty level. States also have the option to increase their income level for pregnant women and infants to 185 percent of the poverty level.

OBRA 1986 gave states the option of extending Medicaid coverage to the low-income aged and disabled with family incomes up to a state-established level not exceeding 100 percent of the poverty level. The Medicare Catastrophic Coverage Act of 1988 required states to phase in Medicare buy-in coverage for aged and disabled Medicare beneficiaries with incomes below the poverty line. This new buy-in group is referred to as qualified Medicare beneficiaries (QMBs). By 1992, all states will have to cover QMBs with incomes up to 100 percent of the poverty level. Currently, among the Tape-to-Tape states, Georgia covers QMBs with incomes up to 100 percent, while Michigan, California, and Tennessee cover incomes only up to 85 percent of the poverty level.

Thus, since 1986, pregnant women, children, the aged, and disabled groups all have routes to Medicaid eligibility that do not rely on AFDC, SSI, or medically needy income tests. Much of this coverage is now mandatory. Beyond the mandatory coverage, fifteen states in 1989 extended Medicaid eligibility to pregnant women and infants with incomes up to the full maximum allowable -- 185 percent of the poverty level. Among these states were California, Michigan and New York. As the description highlights, many of the major changes in Medicaid came toward the end of the study period for this project (1985-88), or followed it.

Services[2]

Service coverage under Medicaid is also complicated, although it has not changed as much as eligibility in recent years. Federal law limits states' flexibility in designing their benefit packages. The twenty-one groups of health care services for which the federal government will share the cost with states are specified in the law (see Exhibit 7), with requirements as to which of these services are mandated or optional for different enrollees (see Exhibit 8). It is difficult to count the types of service covered by Medicaid; many of the twenty-one "groups of services" include several unrelated types of services (for example, group number four includes SNF services, EPSDT, and family planning services).

Of the twenty-one groups of services, three became Medicaid covered services in 1986 -- hospice care, case-management services, and respiratory care services. Additional new services which states may provide under their Medicaid plans are: extended care services to pregnant women, including pregnancy-related and postpartum services for 60 days; services for any other medical condition that may complicate pregnancy; and ambulatory prenatal care for pregnant women during a presumptive eligibility period.

Benefit Levels

Each state selects both a benefit package (or list of services to be covered for each group) and the amount, duration, and scope of each service. To control utilization, and therefore costs, states have employed a variety of methods, including monitoring the medical necessity of inpatient and nursing home admissions; encouraging provision of services in outpatient settings; limiting days of care per stay or per recipient/year; limiting numbers of visits, procedures, or prescriptions; requiring second surgical opinions and prior authorizations; and restricting available drugs to a specific formulary.

In 1986, 20 states restricted inpatient lengths of stay; 26 states required prior authorization for some or all procedures, and 12 states limited weekend admissions and/or pre-operative stays. Of the Tape-to-Tape states, only two imposed limits on the number of days, but all imposed some restrictions on inpatient hospital use:

- New York limits stays to 20 days (40 days in rehabilitation hospitals). Extensions are available if reviews at the 20th day and every three days thereafter conclude the stay to be medically necessary. Pre-operative days are limited to one day. In general, Friday and Saturday admissions are not covered.

---

[2]The data on state service coverage come from Congressional Research Service (1988), Commerce Clearing House (1990), and Health Care Financing Administration (1989).

Exhibit 7

Twenty-One Groups of Services which
May Be Covered by Medicaid

1. Inpatient hospital services (other than services in an institution for mental diseases)

2. a. Outpatient hospital services
   b. Rural health clinic services

3. Other laboratory and X-ray services

4. a. Skilled nursing facility (SNF) services (other than in an institution for mental diseases) for individuals 21 or older
   b. Early and periodic screening, diagnosis and treatment of physical and mental defects for individuals under 21
   c. Family planning services

5. Physicians' services

6. Medical care furnished by licensed practitioners such as podiatrists, optometrists, chiropractors

7. Home health services

8. Private duty nursing services

9. Clinic services

10. Dental services

11. Physical therapy, occupational therapy and services for speech, hearing and language disorders

12. Prescribed drugs, dentures, and prosthetic devices, and eyeglasses prescribed by a physician or an optometrist

13. Other diagnostic, screening, preventive, and rehabilitative services

14. Inpatient hospital, SNF, and ICF services for individuals 65 or older in an institution for mental diseases

15. Intermediate care facility services (other than services in an Institution for Mental Diseases)

16. Inpatient psychiatric facility services for individuals under 21

17. Nurse-midwife services

18. Hospice care

Exhibit 7 (Continued)

Twenty-One Groups of Services which
May Be Covered by Medicaid

19. Case-management services

20. Respiratory care services

21. Other medical care such as transportation, Christian Science services, skilled nursing facility services for individuals under 21, emergency hospital services, and personal care services in the individual's home

---

Additional non-numbered services:

- Extended care services to pregnant women
- Ambulatory prenatal care for pregnant women during presumptive eligibility period

Exhibit 8

Mandatory and Optional Services
By Eligibility Group

Mandatory Services	
Categorically Needy	Medically Needy
Services 1-5 & 17 (Exhibit 7)	Prenatal care and delivery services
Home health to those 21 and older	Ambulatory services for those under 18 and those entitled to institutional services
Home health to those under age 21 if SNF services are provided to that group	Home health services for those entitled to SNF services
Transportation	Transportation
	If services 14 and 16 or ICF/MR services are provided to any medically needy group, then either services 1-5 and 17 or any seven of 1-17 must be provided to that group

Optional Services
All others on the list of twenty-one groups of services.

- Tennessee allowed only 14 days per fiscal year with no extensions (20 for EPSDT beneficiaries) until 1987, when the limit was raised to 20 days. Days paid for by insurance or other third parties are considered to be days paid by the Medicaid program. Friday and Saturday admissions are limited to emergencies.

- Although California does not limit days, the State does impose prior authorization requirements on all elective admissions, with further authorizations for extensions of stays. Additionally, California, after contracting with certain hospitals throughout the State, has limited Medicaid coverage in most cases to those hospitals.

- Georgia does not cover care in inpatient psychiatric hospitals. For general acute care hospitals, Georgia requires prior approval for some services and disallows services such as take-home and experimental drugs and routine diagnostic tests at admission. Georgia reimburses on a per case basis regardless of length of stay.

- Michigan requires prior authorization for elective admissions. For general hospitals, Michigan reimburses by DRG regardless of length of stay. Care in freestanding rehabilitation hospitals or psychiatric units of general hospitals is limited to 18 days, unless extensions are approved. All stays exceeding 40 days must be approved.

Limits on other types of services in 1986 were varied.

Waiver Services

In recent years, states have been given more freedom to structure their Medicaid programs through state waivers. With the approval of the HHS Secretary, states may waive equality of care and freedom of choice requirements (Section 2175 waivers) to:

- Implement a case management system.

- Allow a locality to act as a central broker in selecting among competing health care plans.

- Provide additional services to recipients.

- Restrict providers from whom recipients may receive services.

Of the Tape-to-Tape states, only Georgia does not have a freedom-of-choice waiver in effect. California operates its selective provider contracting program under this waiver, as well as its primary care case

management program and the San Mateo and Santa Barbara capitated care initiatives. Michigan has two of these waivers: one is its Primary Care Physician Sponsor Program and the other is the capitated ambulatory program. New York State operates the Erie County Physician Case Management program under this type of waiver, and Tennessee has two different Primary Care Case Management projects.

Another type of waiver (Section 2176 waivers), may be granted in order to provide home and community based services as alternatives to nursing home care. Services offered may include case management; homemaker aide; adult day care; physical, occupational, and speech therapy; and other services. Under this type of waiver, states may set different limits on scope and duration than are otherwise in effect, provide the services to some localities only, establish per capita ceilings on each recipient's care, and establish cost-sharing requirements for individuals who are eligible for Medicaid only because they are institutionalized.

Reimbursement

Federal Medicaid laws now allow states considerable latitude in developing their own reimbursement methodologies. States must meet four requirements with regard to reimbursement: 1) providers must accept the amounts paid by Medicaid as payment in full (except for cost sharing or share-of-cost/spend-down liabilities); 2) Medicaid is secondary to all other third party coverage; 3) methods of payment must be "consistent with efficiency, economy, and quality of care;" and 4) the state-determined payment levels must be sufficient to attract an adequate supply of providers so that covered services are as available to Medicaid recipients as they are to the general population. In addition, states must follow federal guidelines concerning reimbursement methodologies for hospices, rural health clinics, laboratories, hospitals, nursing homes, and HMOs.

As of August 1987, 42 states (including all five Tape-to-Tape states) used a prospective system to determine inpatient hospital reimbursement; some states based their prospective reimbursement on DRGs, some on flat rates per day or case, and some on negotiated rates with individual hospitals. Georgia's inpatient reimbursement system is particularly unusual; each hospital's costs are used as a basis for establishing prospective rates per admission. Those rates are then applied as the Medicaid reimbursement for every admission at that hospital, until the hospital reaches its ceiling on total admissions for the year at which point the rates are reduced by half. All Tape-to-Tape states except Tennessee experienced a major change in their approach to hospital reimbursement in the 1980s.

SNFs and ICFs are also largely reimbursed prospectively; 45 states use prospective systems for at least one of these types of facilities. Of the Tape-to-Tape states, only Tennessee relies solely on cost-based reimbursement for long term care, while Michigan has so far retained its cost-based system

for ICF/MRs only. In October 1990, states will no longer be required to maintain a "reasonable cost differential" between SNFs and ICFs.

Physicians are reimbursed either on a fee schedule or prevailing charge system in most states, with several using relative value scales. More instructive than the type of system used is the actual amounts paid, which range dramatically across the states. For example, according to a survey conducted in 1986 by HCFA, the maximum allowable charge for a follow-up office visit by a specialist ranged from six dollars (in New Hampshire) to 28 dollars (in Alaska); charges for an appendectomy by a specialist ranged from 160 dollars (in New York) to 673 dollars (in Nevada). Among the Tape-to-Tape states, the amounts allowed were:

STATE	Follow-Up Visit	Appendectomy
California	$11.04	$353.68
Georgia	15.60	399.50
Michigan	7.75	271.50
New York	7.00	160.00
Tennessee	18.00	449.50

FINDINGS

This section presents two types of findings. We first present an overview of key trends in enrollment, utilization, and expenditures among the four states -- California, Georgia, Michigan, and Tennessee -- during the period of 1980-88. This is followed by a summary of the key findings from the twenty analytic studies which were produced under the third Tape-to-Tape contract.

Trends in Enrollment, Utilization, and Expenditures in Tape-to-Tape States

An overview of trends in key measures of enrollment, utilization, and expenditures in the four Tape-to-Tape states participating throughout the 1980-88 period is shown in Figures 1-9. The source of data for the figures is routinely-produced "early returns tables." Appendix II contains tables with detailed statistics.

Trends in total enrollment by state are shown in Figure 1. Across all years, California had by far the largest number of total Medicaid enrollees (approximately 3.6 million), followed by Michigan (about 1.2 million), and then Georgia and Tennessee, which had similar but much smaller enrollee populations than the other two states (500,000 to 600,000). The data shown in the figure represent unduplicated counts of persons ever enrolled in the program. Appendix tables show person years of enrollment as well.[3]

The 1980s were a time of expansion for Medicaid eligibility. Georgia and Tennessee showed substantial growth in the number of enrollees across years. Georgia experienced a 33 percent increase from 1980 to 1988. Tennessee's 23 percent growth occurred primarily during later years, 1986 through 1988. Tennessee reinstituted its medically needy program in 1986; expanded enrollment in Tennessee also resulted from the addition of pregnant women up to 100 percent of poverty in July 1987. Michigan was the only State that showed a decline in enrollment (seven percent). The higher enrollment rates seen during the early 1980s in Michigan were a reflection of the recession in the State rather than changes in Medicaid policy.

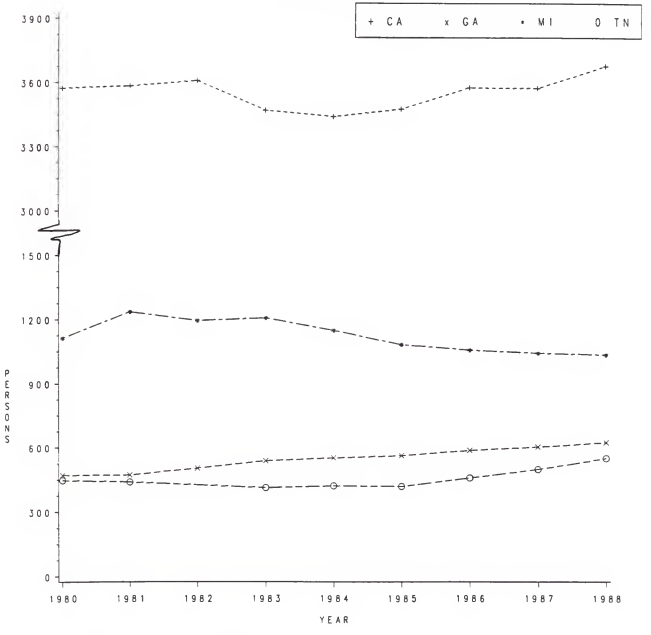
Figure 2 provides more detailed enrollment patterns by eligibility group. The blind and disabled population showed an overall increase in enrollment from 1980 to 1988 across all states. The reverse pattern was

---

[3]When counting enrollees, two different methods can be used. The first method is to count the total number of unique persons who were enrolled at any time during a particular calendar year. In the second method, the person-year method, adjustment is made for the variation in length of enrollment by counting enrollees fractionally according to the portion of the year in which they were actually enrolled. Thus, a person who was enrolled in Medicaid for six months contributed 0.5 person-year to the pool of enrollment experience.

FIGURE 1

MEDICAID TOTAL ENROLLEES BY STATE
TAPE-TO-TAPE STATES
1980-1988
(thousands)



Data are missing for Tennessee for 1982

FIGURE 2

MEDICAID ENROLLMENT GROUPS BY STATE
TAPE-TO-TAPE STATES
1980 - 1988
(thousands)

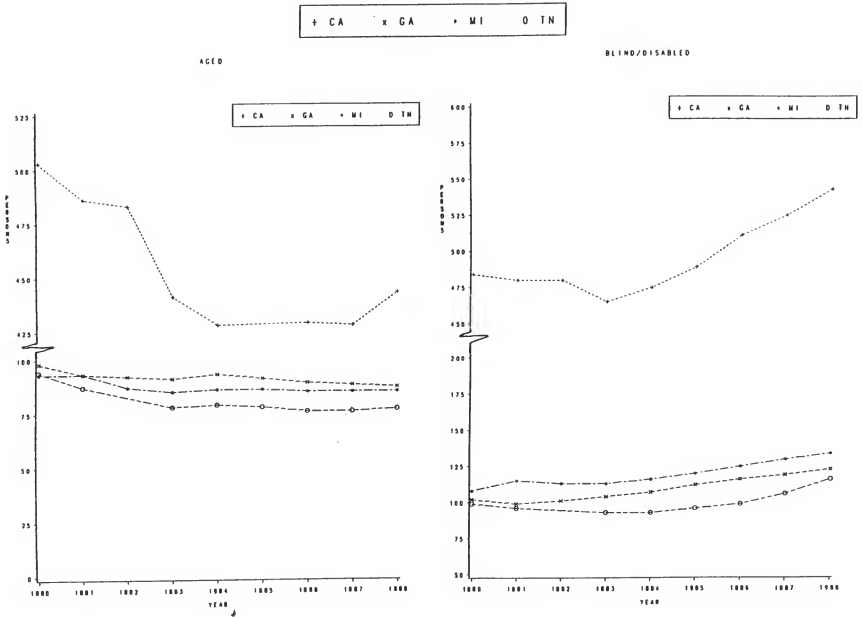
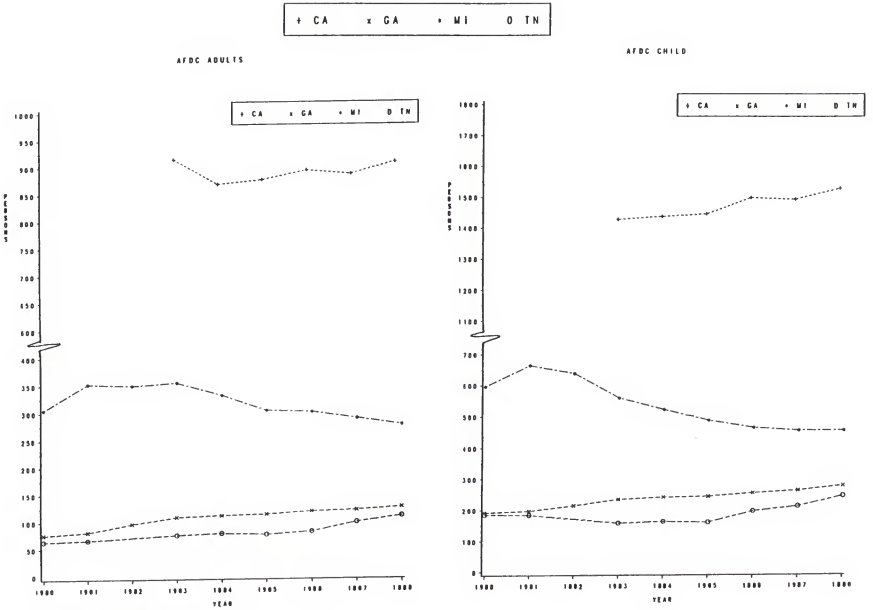


FIGURE 2

MEDICAID ENROLLMENT GROUPS BY STATE
TAPE-TO-TAPE STATES
1980 - 1988
(thousands)



Data are missing for Tennessee for 1982 and California AFDC for 1980-82

observed for Medicaid enrollment of the aged. California's absolute decline in aged enrollees was largest (from 503,110 to 442,845 or 14 percent); Tennessee had the greatest relative decline (22 percent). Research by Burwell and Rymer (1987) suggests that this trend can be attributed to declining poverty in the elderly. AFDC enrollment showed similar trends to the overall state enrollment trends.

Utilization and expenditures measures are also available from the early returns tables. It can be misleading to compare utilization and expenditure rates across time and across states. A difference in the enrollment composition of the State's Medicaid population may be the reason for any observed differences, rather than true service use or expenditures patterns. For example, a state with a high proportion of child enrollees will have relatively low use and expenditures rates, regardless of the underlying use rates for particular groups.

For this reason, for the purpose of the analysis presented here we have "adjusted" all total population rates for a state to a "standard Medicaid population." The standard population was chosen to be California, 1980 Medicaid enrollees. The method used was similar to the age/sex adjustment often used in mortality analyses. In this case, enrollment groups, rather than age/sex groups, were used for adjustment. We used the adjustments in Figures 3, 4, 5, and 9, and Appendix Tables 7, 8, 9, 10, and 15. First we calculated unadjusted rates for each of four enrollment groups: aged, blind/disabled, AFDC child, and AFDC adult. Then we multiplied each of those rates by that enrollment group's California 1980 population. Next, we added those four numbers and divided by the total California 1980 aged, blind/disabled, AFDC child, and AFDC adult population. Utilization rates are calculated per enrollee and expenditures rates are calculated per person year of enrollment. When rates are presented by enrollment group (e.g., for AFDC enrollees) they are not adjusted.

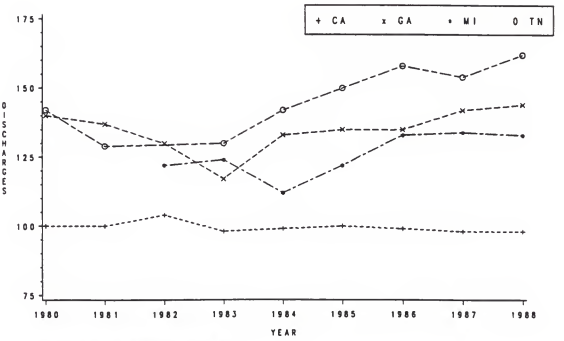
Figure 3 displays adjusted hospital discharge rates per 1,000 Medicaid enrollees for both the total enrollee population and the non-crossover population. Tennessee and Georgia had the highest Medicaid hospital discharge rates for all states and years. Declines were observed in the hospital discharge rates for all states; however, most of this decline was for the Medicare crossover population. Hospital discharge rates among non-crossover enrollees increased with the exception of California. Recall that Medicare PPS was implemented in 1983.

Figure 4 illustrates the trend in hospital days per Medicaid enrollee in the non-crossover population (data were not available for crossovers). The data reflect many of the hospital reimbursement changes that were implemented in the states over the eight-year study period. California implemented a per diem hospital reimbursement system in 1983 which was immediately reflected in the decline of hospital days between 1983 and 1984. However, rates rose again after 1984. In Georgia, a per case reimbursement methodology was implemented, causing a temporary decline in hospital days in 1982 which was followed by a

FIGURE 3

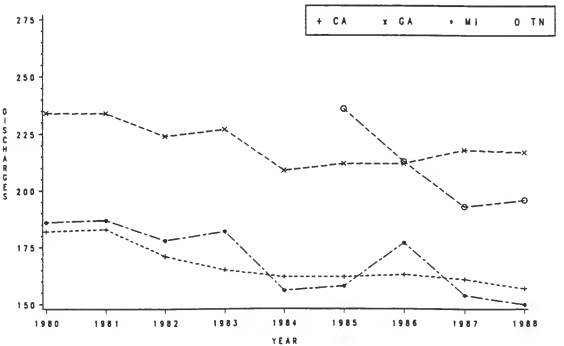
ADJUSTED HOSPITAL DISCHARGE PER 1000 MEDICAID ENROLLEES
TAPE-TO-TAPE STATES
1980 - 1988

NON CROSSOVERS



Data are missing for Michigan for 1980-1981
and Tennessee for 1982

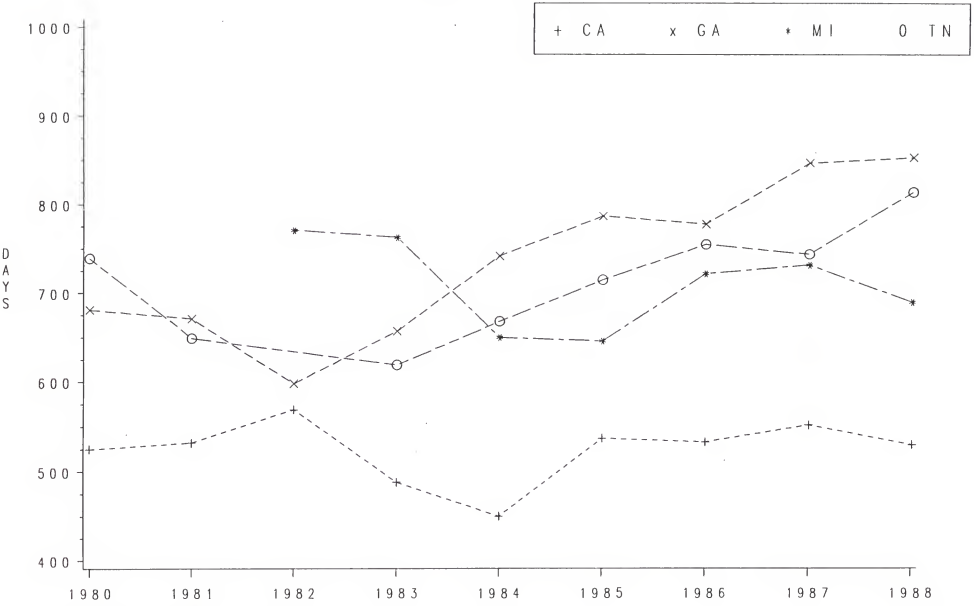
TOTAL ENROLLEES



Data are missing for Tennessee for 1980-1984

FIGURE 4

ADJUSTED HOSPITAL DAYS PER 1000 MEDICAID ENROLLEES
FOR NON CROSSOVERS
TAPE-TO-TAPE STATES
1980 - 1988



Data are missing for Tennessee for 1982 and Michigan 1980-1981

substantial increase in days from 1983 through 1988. Similarly, Michigan's implementation of DRG reimbursement produced a strong, but temporary impact on hospital days in 1984. Tennessee implemented a prospective per diem reimbursement methodology in 1983, with similar effects to those observed in the other states. In addition to those Medicaid program effects, it is also possible that the DRG reimbursement in the Medicare program had a spillover effect onto Medicaid.

Adjusted physician visit rates per enrollee for 1985 and 1988 for the non-crossover population are shown in Figure 5. (Data were not available for crossovers.) Rates are provided separately for physician visits to the hospital versus other physician visits[4]. Michigan had the highest physician visit rate across both visit settings. California had the next highest visit rates overall. This is in spite of the fact that reimbursement rates per visit were higher in Georgia and Tennessee (see page 36). Rates of visits to physicians outside the hospital were higher than hospital visit rates in all states. Michigan and Tennessee experienced substantial increases in physician visit rates in the period.

Appendix Table 10 shows adjusted non-crossover rates of visits to other ambulatory providers: other practitioners, outpatient hospitals, clinics, and rural health providers. These rates were highest in Georgia and Tennessee. By 1988, Georgia was the only State in which the outpatient visit rate (1.61) was slightly higher than the physician visit rate (1.52). Michigan showed the largest increase in outpatient visits from 0.61 per enrollee in 1983 to 1.04 visits in 1988, a 70 percent change.

For the Medicaid program, another important utilization measure is nursing home use. The percent of aged enrollees with a nursing home stay in each state is displayed in Figure 6, along with changes between 1981 and 1988. California showed no real change in the percent of aged enrollees with at least one nursing home stay; all of the other three states experienced increases in nursing home usage among their aged population. Michigan had the highest proportion using nursing homes in both years. Recall that the aged enrollee population was decreasing over time in all four states (see Figure 2); the data in Figure 6 suggest that the decline in the aged enrollee group is occurring more prominently in the non-institutionalized population.

Expenditures per person year of Medicaid enrollment for AFDC enrollees are provided in Figure 7 by state for 1981 and 1988. Both hospital and non-hospital expenditures are shown; the latter includes all outpatient expenditures and physician inpatient expenditures. The largest proportional increases in hospital and non-hospital expenditures in the period, as well as the highest expenditures overall by 1988, were observed in Tennessee and then Georgia. California's expenditures increased by only about 18 percent for both categories of expenditure (hospital and non-hospital). The moderate

[4]Most "other" physician visits were office visits.

FIGURE 5

ADJUSTED PHYSICIAN VISIT RATES PER ENROLLEE
NON CROSSOVERS
TAPE-TO-TAPE STATES, 1985 AND 1988

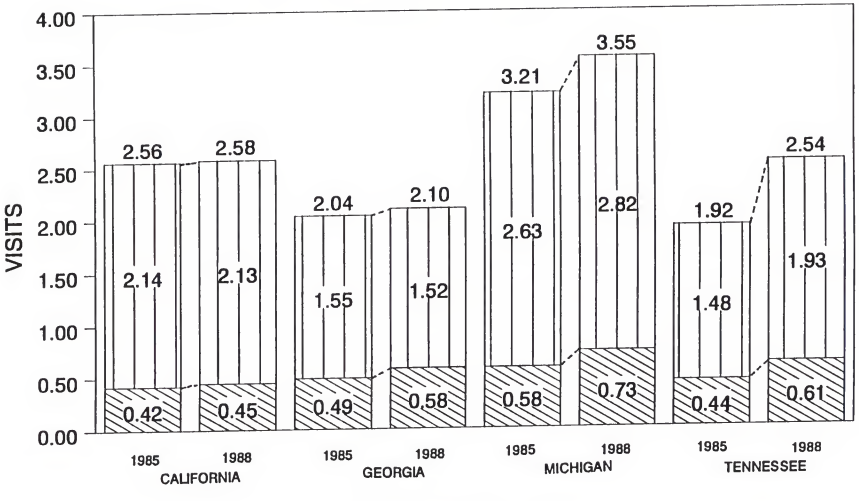


FIGURE 6

PERCENT OF AGED ENROLLEES WITH A NURSING HOME STAY
TAPE-TO-TAPE STATES, 1981 AND 1988

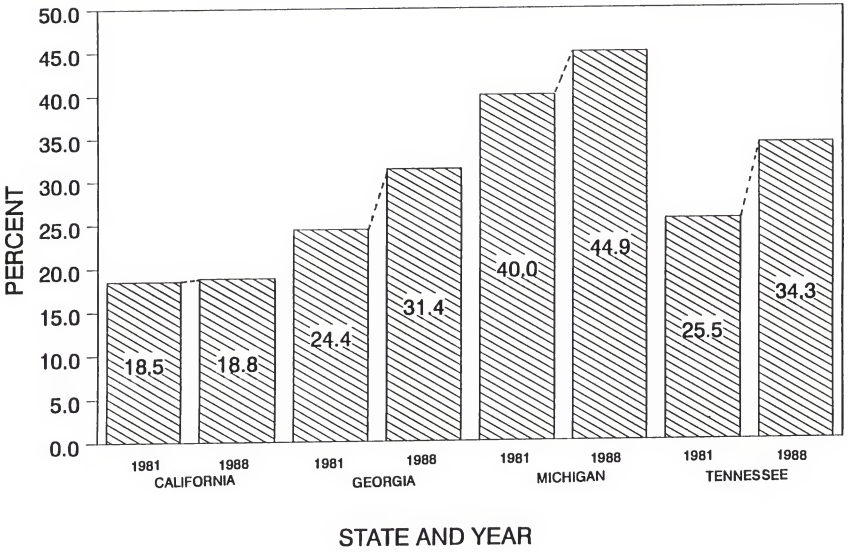
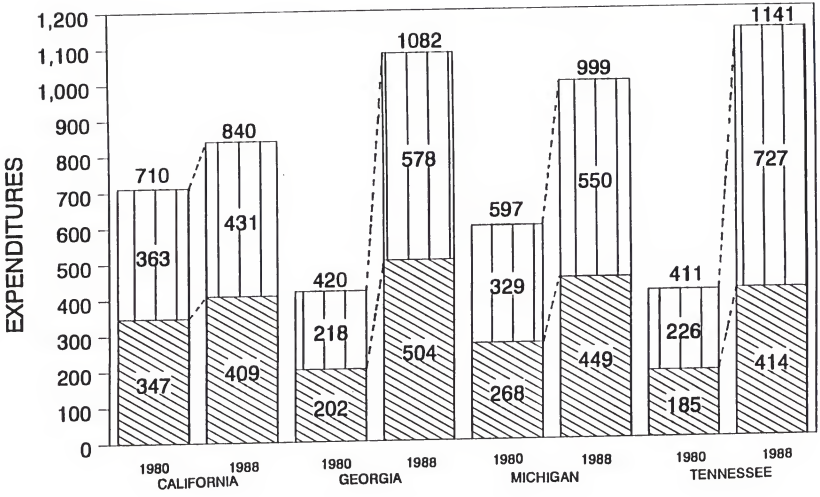


FIGURE 7

EXPENDITURES PER PERSON YEAR
AFDC ENROLLEES
TAPE-TO-TAPE STATES, 1980 AND 1988



increase in California is dramatic when compared to national patterns (Office of National Cost Estimates, 1990). Per capita hospital expenditures for all persons in the U.S. increased by 91 percent between 1980 and 1988. Increases in hospital expenditure rates under Medicaid in the other three states were as follows: Georgia - 149 percent, Michigan - 68 percent, and Tennessee - 125 percent.

Nursing home expenditures also climbed in all states during this period. Figure 8 displays nursing home expenditures per person year for aged enrollees. Although Michigan had the highest expenditures per person year, Tennessee and Georgia had the greatest proportional increases in nursing home expenditures across years. This was not surprising considering the expansion in nursing home usage by the aged population in these two states (Figure 6). California, once again, had the lowest increase in nursing home expenditures. Recall that there was no change in the proportion of aged using nursing homes in California.

Adjusted total expenditures per Medicaid enrollee for all study years are shown in Figure 9. Michigan had the highest expenditure per person year across all years. California had the next highest rates early in the study period, but by the end of the period it was exceeded by both Georgia and Tennessee. California seems to have maintained a lower rate of growth due both to a very moderate growth in hospital expenditures and continued low rates of nursing home expenditures.

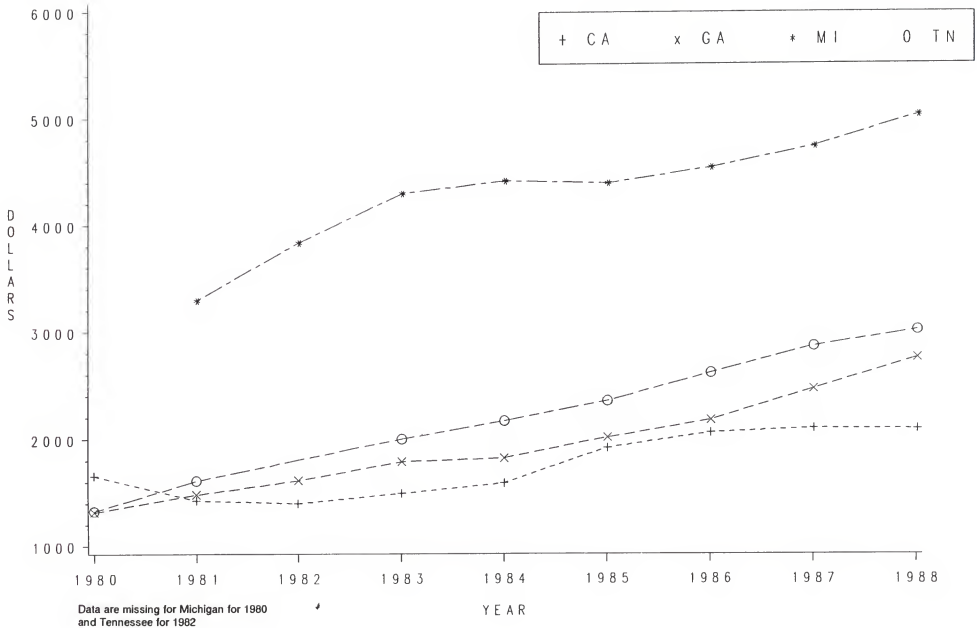
These patterns in expenditure growth should be considered in conjunction with the enrollment patterns in Figures 1 and 2, in order to understand the overall trend in expenditures in each state. In California, expenditure growth per person was moderate and there was no growth in the number of Medicaid enrollees. In Michigan, the number of enrollees declined in the later part of the study period, offsetting the growth in expenditures. On the other hand, the two smaller states -- Georgia and Tennessee -- both experienced large growth in most measures studied: total enrollees, measures of use of services, and expenditures per person.

Overview of Project Studies

SysteMetrics conducted numerous studies using state-level Medicaid data under the third Tape-to-Tape contract. These were designed to assist HCFA in evaluating a range of Medicaid program issues. The following discussion is divided into five topical categories: AIDS, other disability issues, long term care, maternal and child health, and reimbursement and services. Each section describes the issues, data, and results of related studies. This overview also provides some questions for future research.

FIGURE 8

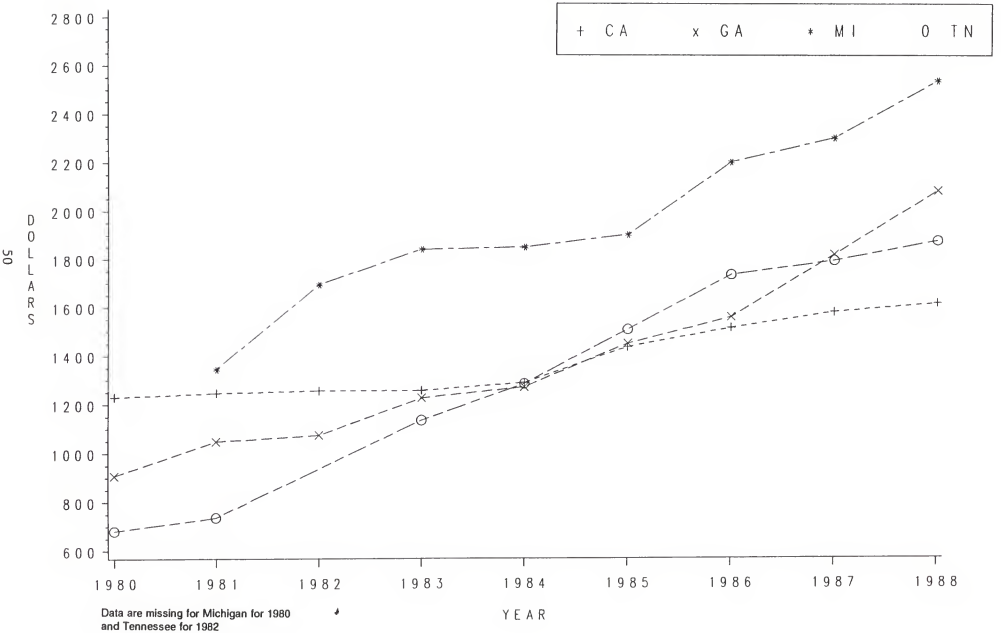
NURSING HOME EXPENDITURES PER PERSON YEAR
FOR AGED ENROLLEES
TAPE-TO-TAPE STATES
1980 - 1988



Data are missing for Michigan for 1980 and Tennessee for 1982

FIGURE 9

ADJUSTED TOTAL EXPENDITURES PER PERSON YEAR
MEDICAID ENROLLEES
TAPE-TO-TAPE STATES
1980 - 1988



Data are missing for Michigan for 1980 and Tennessee for 1982

Acquired Immune Deficiency Syndrome (AIDS)

Medicaid has increasingly become a primary payer of health care services for people with AIDS. Consequently, it was important for HCFA to quickly gain an understanding of the impact AIDS has on Medicaid. To further their understanding of this epidemic's impact on the Medicaid system, three studies were completed.

The first investigation focused on the development of an algorithm to identify AIDS cases using a medical claims and administrative data base (Keyes, Andrews, and Pine, 1988). This study was necessary because prior to October 1986 there were no unique codes in the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) to identify AIDS claims. Although specific ICD-9-CM codes were developed and implemented in the latter part of 1986, there was speculation that these codes were not used consistently. Using both claims data from the State's Medicaid Management Information System and data from the AIDS Special Research File created by the State of California, which was used to verify the AIDS registry status of cases identified by the methodology, an algorithm was developed that identified the majority of AIDS cases on Medicaid between 1981 and 1984. To determine whether the algorithm accurately identified AIDS cases, comparisons of utilization and expenditures for the two groups (i.e., the verified and non-verified cases) were performed and found to be remarkably similar. For example, no statistically significant differences in median expenditures by service category adjusted for months of enrollment were found between the two groups.

The second study of AIDS under the Tape-to-Tape contract focused on examining Medicaid enrollment, utilization, and expenditures for people with AIDS in California from 1981 through 1984 (Andrews, Keyes, and Pine, 1988). It was found that expenditures per month of enrollment decreased as length of enrollment during the year increased. Average annual expenditures increased from 1982 to 1983 and then decreased in 1984. This decrease was most pronounced in hospital services with no indication of a substitution of ambulatory services. This decline is primarily a result of a decrease in hospital reimbursement per day as opposed to changes in use, because discharge rates decreased and length of stay increased.

A third study of AIDS under the Tape-to-Tape contract examined lifetime and temporal trends in Medicaid utilization and expenditures for AIDS patients in California between 1983 and 1986 (Andrews, Keyes, and Pine, 1991). Findings showed that nearly two-thirds of Medicaid recipients with AIDS were enrolled within one month of their onset as reported by the California AIDS registry. This was somewhat surprising since it had been believed that many homosexual males with AIDS enrolled in Medicaid later in their illness, after they had lost their job and health insurance. As higher percentages of IVDAs, women, and children comprise the AIDS population, the occurrence of Medicaid enrollment concurrent with AIDS onset may become more common. In examining annual trends in service utilization, the study found modest evidence that the

decline in hospital days per recipient may be the result of a substitution of outpatient for inpatient services rather than a result of a less severe case mix. Results also showed that annual Medicaid costs of care for adult females were more than for adult males. Finally, lifetime expenditures for those recipients who died while on Medicaid ranged between $22,000 and $29,000 depending on the timing of their enrollment relative to the onset of their illness.

Although numerous studies have revealed estimates of user and treatment costs for AIDS cases in California and New York, data have been quite limited for Medicaid recipients in states with mid-size AIDS populations. Thus, the purpose of the final AIDS study was to examine changes in utilization and expenditure patterns among Medicaid recipients with AIDS-related illnesses in Georgia and Michigan between 1983 and 1985 (Orloff, et al., 1990). The study was also intended to provide baseline cost and utilization data that could be compared to other states and to the cost and use patterns that emerged under different reimbursement systems. For a few measures of the analysis, supplemental data from AIDS cases in California was also compared to the results from Michigan and Georgia. The findings indicated that Michigan had substantially higher annual Medicaid expenditures per recipient than did Georgia. This was primarily the result of differing Medicaid hospital reimbursement systems (Georgia had a fixed rate reimbursement per hospitalization, while Michigan's reimbursement was retrospective and cost-based), which accounts for the majority of the states' differences in costs for caring for a person with AIDS. Hospital-specific expenditures showed a marked decline in Michigan and a slight decline in California, while Georgia remained fairly constant. There was no readily apparent substitution of ambulatory care for inpatient services.

Many questions remain unanswered regarding the progression of AIDS and patterns of service use and expenditures under Medicaid. As new treatment regimens such as AZT become more efficacious, and there continues to be less emphasis on hospital utilization and more on extended case management systems, it will be important to conduct more indepth studies of the use of long term care services, and prescription drugs. It is also important to identify and study high risk populations such as intravenous drug users, pediatric AIDS cases, and women. These groups are increasingly changing the case mix of AIDS cases nationally and are overrepresented in the Medicaid population.

Other Disability Issues

Over the last several years the cost of providing medical care to disabled enrollees has been a major factor underlying increased Medicaid expenditures. As our earlier data showed, the disabled populations of all four Tape-to-Tape states increased steadily throughout the 1980s. A better understanding of the Medicaid disabled population is important to more accurately anticipate this population's role in overall Medicaid expenditures.

One study conducted by Adams, Ellwood, and Pine (1989) analyzed the utilization and expenditures of a large portion of the disabled population under Medicaid in 1984 -- those receiving cash assistance through the Supplemental Security Income (SSI) program. Medicaid Tape-to-Tape data were linked to a national sample of SSI data, derived from the Characteristics Extract Record (CER) based on SSI recipients and applicants, in order to study SSI disabled and blind in four states: California, Georgia, Michigan, and Tennessee. The CER provided information not otherwise available including major disabling conditions. Findings showed that recipients with mental retardation or other mental disorders as their major disabling condition accounted for 37 to 58 percent of Medicaid expenditures. This proportion was high because a large number of enrollees had these conditions, not because these enrollees had particularly high expenditures. Enrollees disabled with neoplasms, blood disorders, and genitourinary conditions had the highest annual Medicaid expenditures. In addition, younger enrollees tended to have higher Medicaid expenditures, compared to those dually enrolled in Medicare who had the lowest Medicaid expenses.

In a specialized study of mental health care, SysteMetrics explored Medicaid expenditures for alcohol, drug abuse, and mental health (ADM) care, specifically for the chronically mentally ill (CMI) population (Wright and Buck, 1991). Medicaid claims data from California and Michigan for 1984 were used to estimate the treatment costs for mental health care. Findings showed that in both California and Michigan approximately nine percent of all Medicaid enrollees during 1984 received at least one ADM service. Mental health services for the CMI, exclusive of long term care, accounted for an average of 12 percent of all Medicaid ADM expenditures in both states. However, this group of ADM service recipients was quite costly. Their ADM services net of long term care accounted for approximately 30 percent of all Medicaid expenditures in both California and Michigan.

These initial studies, along with studies of mental retardation and the working disabled from the second contract, have provided only an initial look at disability and the Medicaid program. Future studies could emphasize longitudinal enrollment and expenditures, as well as other subpopulations. Of particular interest are enrolled substance abusers.

Long Term Care

Long term care has increasingly consumed a larger portion of Medicaid funding. The enactment of the Medicare Catastrophic Coverage Act of 1988, and the associated debate over financing care for the elderly, has renewed interest in further study of numerous issues related to long term care.

One study conducted by SysteMetrics examined the phenomenon of "asset spend-down" before Medicaid eligibility among elderly nursing-home recipients in Michigan (Burwell, Adams, and Meiners, 1990). The "spend-down" population refers to many elderly persons who enter nursing homes as private pay patients, spend their available life savings, and then apply for Medicaid

after their assets have been depleted. The goal of the study was to examine the elderly Medicaid nursing-home users in Michigan in 1984 who entered the homes as private pay patients in comparison to those who become eligible before or concurrent to their nursing-home admission. The spend-down population comprised 27.2 percent of all nursing home users. In aggregate, the State of Michigan spent approximately $75.4 million in 1984 for nursing-home care for these persons, which accounted for 25 percent of the State's Medicaid nursing-home expenditures. A policy recommendation from the study was to encourage initiatives to assist the elderly to buy long term care insurance.

SysteMetrics also estimated the impact that the Medicare Catastrophic Coverage Act would have on Medicaid expenditures for the aged in Georgia, putting particular emphasis on Medicaid program savings (Burwell, 1989). Using Medicaid claims and eligibility files linked with Medicare Part A claims files, the study estimated the amount of Medicaid spending that would be covered under Medicare in four services areas: inpatient hospital services, SNF services, Medicare Part B services, and outpatient prescription drugs. The study population consisted of 112,161 persons age 65 and over enrolled in the Georgia Medicaid program in 1984. Estimated savings after the implementation of the original provisions of the Act showed a 17.5 percent savings for inpatient hospital services, 1.2 percent savings for SNF services, 12.5 percent for Part B services, and 20 percent savings with the implementation of the prescription drug benefit. Analyses showed that over half of all Medicaid savings to the State of Georgia between 1989 and 1993 would have been derived from the new prescription drug benefit.

In another study of the elderly, Ray, Griffin, and Baugh (1989) examined mortality following hip fracture before and after implementation of the Prospective Payment System (PPS). Other studies of hip fracture patients in hospitals showed marked decreases in length of stay following the implementation of PPS. This study assessed whether this change influenced the mortality of hip fracture patients. A sample of hip fracture patients 65 years of age and older was studied from the Michigan Medicare program (2,130 patients two years preceding PPS and 2,238 patients two years following PPS). Although the demographic characteristics of hip fracture patients did not change after PPS, the mean length of stay decreased by 4.4 days. However, mortality in the year following the fracture did not change: 23.2 percent before PPS and 23.7 percent after PPS. Therefore, these findings indicated that quality of care for hip fracture patients did not deteriorate following implementation of PPS.

In a final long term care study under this contract, SysteMetrics studied Medicare and Medicaid financing of health care services for the aged (Adams, 1991). Data from the 100 percent 1984 and 1985 MEDPAR files were merged to the Tape-to-Tape files in two states: California and Georgia. The goal of this study was to examine the role that catastrophic nursing home versus other health care costs play in impoverishing the elderly. The results indicate that nursing home enrollees with evidence of catastrophic long term

care costs were a minority of new enrollees; they were only 19 percent of new enrollees in California and 34 percent in Georgia. Thus, the majority of elderly enrollees enrolled in the community and, hence, other types of costs, appear to be the cause of their Medicaid enrollment. Hospital utilization prior to Medicaid was examined for both groups to understand the role they might play. A surprisingly small percentage of community enrollees had been hospitalized in the period of time for which they could be observed; only 14 percent in California and 21 percent in Georgia were hospitalized prior to eligibility. Furthermore, estimated out-of-pocket costs for these stays averaged only $500 in both states. This indicates that the newly enrolled elderly are either near-poor or experience other catastrophic costs that lead to enrollment in Medicaid. Alternatively, life events, such as the loss of a spouse, may explain enrollment of a large number of these community enrollees.

Issues related to providing long term care to the elderly will continue to have an impact on Medicaid, given the rising expenses, size, and health care needs of this population. These studies have provided insights into various health policy strategies to meet the needs of elderly Medicaid enrollees.

Maternal and Child Health

Medicaid is a primary source of medical care financing for low-income pregnant women and children. Over the years, adequate health services have been shown to improve these populations' health status, thus enhancing the importance and potential impact of the Medicaid program. Several Tape-to-Tape studies provided information on the number of women and infants receiving Medicaid services, the types of Medicaid services received, and their expenditures in selected states.

The first study (described in two separate papers -- Howell and Brown, 1989; Howell and Ellwood, 1991) analyzed prenatal, delivery, and infant care services and expenditures under Medicaid in three states -- California, Georgia, and Michigan, during 1983-1984. Findings from 12,045 deliveries showed that more than half of Medicaid expenditures for the study population were for hospital care and delivery, and less than 12 percent of expenditures were for prenatal care. High-cost deliveries accounted for up to 41 percent of total delivery payments. In the AFDC population in 1983 approximately 33 to 41 percent of expenditures went toward pregnancy, delivery, and newborn care. Interestingly, 40 to 60 percent of women with deliveries covered by Medicaid were not Medicaid enrollees when they became pregnant. The proportion enrolled in Medicaid grew throughout the prenatal period.

The second study (Howell, et al., 1990), built on the analytical framework developed in the first study. It analyzed the outcomes and costs of obstetrical care among four groups of women who delivered during October of 1983 in California: short-term Medicaid enrollees (1,880 women), long-term Medicaid enrollees (5,612 women), non-Medicaid mothers who resided in low-income areas (4,054 women), and non-Medicaid mothers who lived in

high-income areas (1,464). Results showed that all three low-income groups had substantially greater odds of receiving late prenatal care when compared to non-Medicaid residents of high-income areas. Length of enrollment in Medicaid prior to delivery may positively influence the initiation of prenatal care. The association between prenatal care and low birthweight was less clear. Even though long-term Medicaid enrollees and non-Medicaid mothers living in low-income areas had four times the odds of receiving late prenatal care compared to non-Medicaid residents of high-income areas, after adjusting for demographics and maternal health characteristics, these three groups did not differ in their risk of delivering a low birthweight infant.

A third study of obstetrical care involved a longitudinal analysis of the effect of birthweight and other problems at delivery on patterns of Medicaid enrollment, service use, and expenditures for infants from birth to age three in two states (New York and California) in 1983-1986 (Herz and Hirsch, 1991). For each study state, a cohort of Medicaid deliveries occurring in October of 1983 were identified and followed over a 36-month period. Variations in patterns of enrollment, cost, and use of inpatient and outpatient services were analyzed for infants categorized according to birthweight and presence or absence of a major problem at birth based on delivery discharge diagnoses and other data. Results demonstrate that: (1) optional medically needy provisions are an important vehicle for Medicaid enrollment at birth, (2) length of enrollment is strongly related to maintenance assistance status but not birthweight/problem status at delivery, (3) low birthweight infants and newborns with problems were more often users of selected services and used more of those services, especially inpatient care, across study years and states, and (4) despite the general tendency toward reductions in service use over time, costs to Medicaid continue to be higher through age 3 for infants who were low birthweight and/or had major problems at birth compared to newborns without these conditions.

All of these Tape-to-Tape studies suggest that, to the extent that receipt of Medicaid-financed preventive care during the periods prior to and during pregnancy can reduce the incidence of low birthweight and other serious problems at birth, overall costs to Medicaid in the early years of life may be reduced. These data also suggest that in evaluating the impact of recent Medicaid eligibility expansions on service use, costs and birth outcomes, one of the major challenges will be to separate the effects of pre-existing health status from the effects of increased access to (and use of) Medicaid-financed services.

A final study under the contract focused specifically on Medicaid children and their patterns of hospital discharge and utilization of ambulatory services in three states (California, Georgia, and Michigan) in 1983-1984 (Adams, 1990). This study analyzed Medicaid children's patterns of acute and ambulatory care to shed light on whether policy makers should be concerned with unnecessary hospitalizations or the lack of preventive care. The study shows that declines in hospitalization were accompanied by declines in ambulatory services for most age groups in Georgia and Michigan, but

increased ambulatory care for most Medicaid children in California. It was not clear whether this reflected changes in medical technology, an appropriate substitution of ambulatory services, or a reduction in access due to Medicaid restrictions on physician reimbursement. The decline in both types of utilization in Georgia and Michigan appears consistent with the latter. Further research is needed to analyze the impact that various health factors and access to physician services actually have on inpatient and ambulatory utilization, as well as outcomes, among Medicaid children.

Reimbursement and Services

Cost-containment policies have been of particular concern to Medicaid policymakers since the late 1970s. SysteMetrics' study of the outcomes of California's Medicaid cost containment policy was designed to examine this issue in one state (Preston et al., 1990). In 1982, California enacted an important legislative package which contained several cost containment features including fee reductions for many non-acute services, narrowing the definition of medical necessity, a temporary reduction in medically needy income levels, and the appointment of an independent negotiator to execute "selective contracts" with cost effective hospitals. These Medi-Cal cost containment initiatives resulted in a decline in total Medi-Cal expenditures by 19 percent or $656.5 million between 1981 and 1984 after adjusting for inflation.

Capitated coverage of Medicaid services has also been an important method for containing the rate of growth in Medicaid expenditures. One study focused on this issue and demonstrated the use of state MMIS data in capitation rate development, as well as exploring the impact of methodological refinements on capitated rate levels (O'Brien, Baugh, and Rothberg, 1989). Results showed that using a state's own historical MMIS to determine utilization and expenditures trends to support the development of their own capitation rates was imperative, since other states may or may not have similar patterns. The data also demonstrated the importance of eligibility group and maintenance assistance program status when developing capitation rates because different population segments have unique patterns of care dependent on the groups' relative size, per capita expenditures, and geographic location. Thus, many factors must be considered in order to establish fair and feasible state capitation rate levels.

SysteMetrics further studied the impact of two innovations in hospital reimbursement under Medicaid -- competitive bidding contracts in California phased-in during 1983 and DRG payments in Michigan coupled with a stringent prior authorization program which was implemented in 1984 (Wright, 1991). The objective of the study was to examine the impact of a major shift in reimbursement and regulatory control on treatment patterns for selected tracer conditions and the possible implications for quality of care. Findings showed a shift in inpatient utilization following the introduction of selective contracting and DRGs. The shift differed substantially by diagnostic group and did not always follow the presumed financial incentives. Interestingly,

rather than a substitution of ambulatory visits for inpatient care, the total volume of care declined for most tracer conditions. Further study is necessary to determine whether Medicaid patients were receiving "excessive" care prior to the reimbursement innovations or whether the decline in total volume of care represents a potential for reduced quality of care or problems with access to care.

Another area involving reimbursement issues of particular concern to Congress was a study of the impact of state second surgical opinion and preadmission review programs on the Medicaid program (U.S. Department of Health and Human Services, 1989). SysteMetrics compiled and analyzed Medicaid claims data from Georgia, Michigan, and Tennessee for 1984 to determine which procedures were high in volume or high in average or aggregate payment in the Medicaid population. This information was contained in a Report to Congress prepared by HCFA staff. Inpatient and outpatient procedures were studied separately. The inpatient analysis found that obstetric procedures were high in volume and consequently, high in aggregate payments, while operations of the cardiovascular system were prominent on the list of procedures with high average payment. The top ten procedures in terms of volume accounted for between 50 and 63 percent of the total volume of inpatient procedures across the three states. The outpatient analysis revealed a sizeable overlap across states in the high volume outpatient procedures (mostly associated with minor accidents). These tended to be low in average payment but relatively high in aggregate payment. Ultimately, 38 procedures were listed as potentially appropriate for a mandatory second surgical opinion program without causing undue risk to the patient.

SysteMetrics also conducted a study of changes in physician service volume and cost under Medicaid in Georgia, Michigan, and Tennessee between 1983 and 1988 (Klingman, 1991). The study measured the volume of physician services and the Medicaid cost of those services along three major dimensions of service: type of setting (inpatient, etc.), type of service (surgery, etc.), and physician specialty (internist, etc.). The results suggest that the various Medicaid program changes adopted in Michigan may have exerted more restraint on the volume and cost of Medicaid physician services than did the changes adopted in the other two states. Moreover, these changes appear to have affected the intensity of the services rendered more than their volume. Apparently the various policy changes designed to restrain the growth of inpatient care in the three states' Medicaid programs actually had little effect on physician services rendered in inpatient settings. On the other hand, these and other policy changes apparently had the intended impact on physician services in outpatient settings (clinic, etc.): the use and cost of physician outpatient services also generally increased in all three states between 1983 and 1988. Ambulatory settings (physician's office) however, generally declined in Georgia and Michigan, but increased in Tennessee. The results for type of service and type of physician specialty were far less clearcut.

In the area of access to hospital care for Medicaid recipients, SysteMetrics compared the characteristics of hospitals serving the general public and Medicaid recipients in California and Michigan during 1984 (Andrews et al., 1991). Data from the Tape-to-Tape files and the American Hospital Association Annual Survey of 1984 were used for the analysis. Results indicated that a greater concentration of discharges in a small number of "high Medicaid volume" urban and rural hospitals in each state was observed for Medicaid recipients compared to the general population. Additionally, the discharge data suggest that SSI crossovers and other recipients (primarily non-AFDC children) receive inpatient care in different hospitals from the general population as well as other Medicaid eligibility groups (AFDC adults, AFDC children and SSI noncrossovers).

One of the last studies conducted by SysteMetrics under the Tape-to-Tape contract involved an analysis of the utilization and expenditures for prescription drugs among Medicaid subgroups in Michigan and Georgia during 1985 (Tudor, Benedict, and Tollers, 1991). The purpose of the study was to determine how demographic and geographic variables (e.g., age, gender, race, and rural or urban residence) influence prescription drug use in the Medicaid populations of these two states. Prescription drug claims found in the outpatient prescription drug files were analyzed for four enrollment groups: children, adults, aged and blind/disabled. The largest percentage of users in both states were children. The average utilization rates for aged and blind and disabled enrollees were substantially higher than those for children or adults in both states. Female enrollees in both states had substantially higher drug utilization rates than males. Whites had average prescription rates that were twice as high as non-whites in Georgia. Georgia's average expenditure rates were somewhat higher than Michigan's. Expenditures were substantially higher among the aged than other groups in both states, averaging $415.10 per person year in Georgia and $360.30 in Michigan.

CONCLUSIONS AND RECOMMENDATIONS

The methodologies and analyses developed from the third Medicaid Tape-to-Tape contract have shown that it is possible to develop a person-level cross-state research data base from divergent state MMIS data systems. The constant policy and legislative changes to Medicaid at the federal and state levels, combined with the frequent changes in state approaches to data processing, mean that an intensive, on-going analytical effort is essential to assuring high quality data.

Expanding the Tape-to-Tape Approach to Other States

The Office of Research of HCFA hopes to use the lessons learned from the Tape-to-Tape project to expand the number of states for which it has person-level data. The current plan is to use similar approaches to those used for Tape-to-Tape in order to develop research files from the data in the Medicaid Statistical Information System (MSIS). MSIS data are also person-level data from state MMIS systems, received from states to construct 2082 reports. The fourth Tape-to-Tape contract is investigating the possibility of applying Tape-to-Tape methodologies to MSIS data. The Tape-to-Tape experience suggests that creating such data will require close interaction with state staff as well as careful monitoring of the content of files as they are received. Such a process requires a level of effort that increases, for the most part, in proportion to the number of states included in the data base.

Given that MSIS is a voluntary system, as is Tape-to-Tape, it is important to minimize the burden on states in order to achieve state participation. However, it is not possible to develop reliable research data from MSIS files without substantial state interaction. Our experience from Tape-to-Tape shows that some (not all) states are willing to provide the assistance of their staff, and that they view the development of Medicaid research files as a cooperative effort. Such cooperation will be necessary if the number of states included in HCFA's Medicaid research data base is to be expanded.

These lessons from Tape-to-Tape suggest that it may not be possible to expand the research approach to all MSIS states, due to limitations in resources at both the state and federal level. If this is the case, HCFA should target its activities towards states which meet one or more of the following criteria:

- The Medicaid program of the state has unique characteristics that are of high policy interest (e.g., certain optional groups are covered).

- The state is relatively large, and therefore its inclusion substantially expands the proportion of the national Medicaid program covered by HCFA's research data.

- The state has been submitting MSIS data for some time, its 2082 reports have been accepted by HCFA, and the quality of the data (as observed in certain standard frequencies and edit reports) is apparently good.

- The state is in a region of the country currently not represented in the Tape-to-Tape data.

- Most importantly, the state has agreed to cooperate with HCFA in responding to questions and requests for documentation on an ongoing basis.

Using these criteria, it should be possible to identify several states whose data can be used for research. At the same time, it is critical to continue the intensive effort to maintain the quality of the data for the four states for which ten years of data are already available. This time series provides a rich and unique source of data for longitudinal analysis of the Medicaid program in these states.

REFERENCES

Adams, E.K.: Medicare and Medicaid Financing of Health Care Services for the Aged Before and After Medicaid Eligibility. HCFA Contract No. 500-86-0016. Lexington, MA. SysteMetrics, 1991.

Adams, E.K.: Hospital Discharges and Utilization of Ambulatory Services by Medicaid Children, 1983-1984: Three States' Experience. HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, 1990.

Adams, E.K., Ellwood, M.R., and Pine, P.L.: Utilization and expenditures under Medicaid for Supplemental Security Income disabled. Health Care Financing Review. HCFA Pub. No. 03286. Office of Research and Demonstrations, Health Care Financing Administration. Washington, D.C. U.S. Government Printing Office, Fall 1989.

Andrews, R., Herz, E., and Dodds, S., et al.: Access to Hospital Care for Medicaid Recipients in California and Michigan, 1984. HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, January 9, 1991.

Andrews, R., and Howell, E.: Gaps in the Medicaid Tape-to-Tape Data Base. HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, August 1990.

Andrews, R.M., Keyes, M.A., and Pine, P.L.: Acquired immunodeficiency syndrome in California's Medicaid program, 1981-1984. Health Care Financing Review. HCFA Pub. No. 03274. Office of Research and Demonstrations. Health Care Financing Administration. Washington, D.C. U.S. Government Printing Office, Fall 1988.

Andrews, R.M., Keyes, M.A., and Pine, P.L.: AIDS and Medicaid in California: Lifetime Patterns and Temporal Trends in Expenditure and Utilization. HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, 1990.

Burwell, B., and Rymer, M.: Trends in Medicaid eligibility: 1975 to 1985. Health Affairs 6(4):30-45, Winter 1987.

Burwell, B.O.: Estimated Impact of the Medicare Catastrophic Coverage Act on Medicaid Expenditures for the Aged in Georgia. HCFA Contract No. 500-86-0016. Lexington, MA. SysteMetrics, October 1989.

Burwell, B.O., Adams, E.K., and Meiners, M.R.: Spend-down of assets before Medicaid eligibility among elderly nursing-home recipients in Michigan. Med Care 28(4):349-362, April 1990.

Cherlow, A., Herz, E.J., Dodds, S., and Miller, K., et al.: Medicaid Files, Administrative Manuals, Vols. 1-13. HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, March 1991.

Commerce Clearing House, Inc.: Medicare and Medicaid Guide, Vols. 1-5. Chicago. Commerce Clearing House, 1990.

Congressional Research Service: Medicaid Source Book: Background Data and Analysis. Washington, D.C. U.S. Government Printing Office, 1988.

Dodds, S., Blake, J., and Miller, K., et al.: Accessing and Using the Tape-to-Tape Data Bank. HCFA Contract No. 500-86-0016. Santa Barbara, CA. SysteMetrics, 1990.

Health Care Financing Administration: Health Care Financing Program Statistics: Medicare and Medicaid Data Book, 1988. HCFA Pub. No. 03270. Washington, D.C. U.S. Government Printing Office, April 1989.

Ellwood, M.: What Happens to SSI Recipients in a Medicaid 209(b) State: Utah, 1986. HCFA Contract No. 500-86-0016. Lexington, MA. SysteMetrics, March 1991.

Herz, E.J. and Hirsch, M.B.: The Longitudinal Effects of Birthweight on Patterns of Medicaid Enrollment, Service Use, and Expenditures Among California and New York Infants from Birth through Age Three: 1983-1986. HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, 1991.

Howell, E.M., and Brown, G.A.: Prenatal, delivery, and infant care under Medicaid in three states. Health Care Financing Review. HCFA Pub. No. 03284. Office of Research and Demonstrations, Health Care Financing Administration. Washington, D.C. U.S. Government Printing Office, Summer 1989.

Howell, E.M., and Ellwood, M.R.: Medicaid and pregnancy: issues in developing expanded programs. Family Planning Perspectives. In press.

Howell, E.M., Herz, E., Wang, R.A., et al.: A comparison of Medicaid and Non-Medicaid obstetrical care, October 1983. Health Care Financing Review. In press.

Keyes, M.A., Andrews, R.M., and Pine, P.L.: Development of an Algorithm to Identify AIDS Cases in a Medical Claims Data Base. HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, 1989.

Klingman, C.D.: Changes in Physician Service Volume and Cost Under Medicaid in Georgia, Michigan, and Tennessee between 1983 and 1988. HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, 1991.

Klingman, D., and Flood, J.: The Medicaid Data Comparison Study: State Data from HCFA's Tape-to-Tape Files, Form 2082 Reports and Form 64 Reports. HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, June 1987.

Mason, J.O., and McGinnis, J.M.: "Healthy People 2000": An overview of the national health promotion and disease prevention objectives. Public Health Reports. 105(5):441-446, September-October 1990.

O'Brien, M.K., Baugh, D.K., and Rothberg, G.: Issues in Capitating Medicaid Services: Exploring Rate Development Methodologies. HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, March 1989.

O'Brien, M., Cherlow, A., and Howell, E. et al.: An Overview of the Quality of Data in HCFA's Tape-to-Tape Medicaid Data Files. HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, April 1990.

Office of National Cost Estimates. National health expenditures, 1988. Health Care Financing Review. HCFA Pub. No. 03298. Office of Research and Demonstrations, Health Care Financing Administration. Washington, D.C. U.S. Government Printing Office, Summer 1990.

Orloff, T.M., Keyes, M.A., and Pine, P.L., et al.: A Comparison of Medicaid Utilization and Expenditures in Mid-Size AIDS Populations: Georgia and Michigan, 1984-1985. HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, May 1990.

Preston, B., McDevitt, R., and Ruther, M., et al.: Outcomes of California's Medicaid Cost Containment Policy. HCFA Contract Nos. 500-81-0030 and 500-86-0016. Washington, D.C. SysteMetrics, March 1990.

Ray, W.A., Griffin, M.R., and Baugh, D.K.: Mortality following hip fracture before and after implementation of the Prospective Payment System. Arch Intern Med 150:2109-2114, October 1990.

SysteMetrics: Medicaid Statistical File, Vols. 1-2. HCFA Contract No. 500-86-0016. Santa Barbara, CA. SysteMetrics, 1991.

Tudor, C., Benedict, B., and Tollers, E.M.: Utilization and Expenditures for Prescription Drugs Under Medicaid in Two States in 1985. Draft report under HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, 1991.

U.S. Department of Health and Human Services. Report to Congress: High Volume and High Payment Procedures in the Medicaid Population. HCFA Pub. No. 03289. Baltimore, MD. Health Care Financing Administration, September 1989.

Wright, G.E.: Impact of Medicaid Hospital Reimbursement and Utilization Controls on Patterns of Care in California and Michigan. HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, January 1991.

Wright, G.E., and Buck: The Cost to Medicaid of Mental Health Services: A Comparative Study of Michigan and California. HCFA Contract No. 500-86-0016. Washington, D.C. SysteMetrics, 1991.

APPENDIX I

Data Element Lists

Uniform Claims Files

Contents of Uniform Claims Files and Availability by State
1985-1988

Claim Type	Tape-to-Tape Data Element Number	Data Element Name	Availability of Data Element CA	MI	TN	GA
All Claims (Header Portion)	001	Claim Type	X	X	X	X
	002	State Code	A	A	A	A
	003	Recipient Birthdate	X	X	X	X*
	004	Recipient Medicaid Number	X	X	X	X
	005	Recipient Sex	X	X	X	X
	005.1	Recipient Race	0	X	X	X
	006	State Specific Eligibility Group	X	X	X	X
	007	Uniform Eligibility Group	X	X	X	X
	008	Provider ID Number	X	X	X	X
	009	Provider Type	X	X	X	X
	010	Charge	X*	X	X	X
	011	Charge Indicator	A	A	A	A
	012	Medicaid Amount Paid	X*	X	X	X
	013	Medicaid Amount Indicator	A	A	A	A
	014	Other Third Party Amount Paid/ Patient Liability	S	X	X	X*
	015	Other Third Party Amount/Patient Liability Indicator	A	A	A	A
	016	Date of Payment	X*	X	X	X
	017	Service Category (Medicaid Minimum Data Set)	X	X	X	X
Outpatient (MD, OPD, Lab, X-Ray, etc.)	101	Service From Date	X	X	X	X
	102	Service To Date	X	X	X	X
	103	Quantity	X	X	X	X*
	104	Uniform Service Code	X*	X	X	X*
	104.1	State Specific Service Code	X*	X	X	X*
	104.2	State Specific Service Code Modifier	X*	X	X	X*
	104.3	State Specific Service Code Flag	X*	X	X	X*
	105	Diagnosis Code	X*	X	X	X*
	106	Place of Service	X	X	X	X*
	151	Medicare Amount Paid	S	X	X	X
	152	Medicare Amount Indicator	A	A	A	A
	161	Ambulatory/Institutional Indicator	X	X	X	X
	199	Yearly Master Recipient Medicaid Number	A	0	0	0
Drugs	201	Date Filled	X	X	X	X
	202	Prescribing Physician ID Number	0	X	X	X*
	203	Quantity	X	X	X	X
	204	Refill Indicator	0	X	X	X
	205	Drug Code Indicator	A	A	A	A
	206	Uniform Drug Code	X	X	X	X
	299	Yearly Master Recipient Medicaid Number	A	0	0	0

Date: December 3, 1990

Contents of Uniform Claims Files and Availability by State (Continued)
1985-1988

Claim Type	Tape-to-Tape Data Element Number	Data Element Name	Availability of Data Element CA	MI	TN	GA
Dental	301	Treatment From Date	X	X	X	X
	302	Treatment To Date	X	X	X	X
	303	Tooth Number	X	X	X	X*
	304	Uniform Treatment Code	X	X	X	X
	399	Yearly Master Recipient Medicaid Number	A	0	0	0
Inpatient Hospital (Acute)	401	Admission Date	X	X	X*	X
	402	Discharge Date	X	X	X	X
	403	Discharge Status	X	X	X*	X*
	404	Primary Diagnosis Code	X	X	X	X*
	405	Secondary Diagnosis Code	X*	X	X	X*
	406	Uniform Principal Surgical Procedure Code	0	X	X*	X*
	406.1	State Specific Primary Procedure Code	0	X*	X*	X*
	406.2	State Specific Secondary Procedure Code	0	X*	X*	X*
	407	Principal Procedure Date	0	X	X*	X*
	408	Medicaid Covered Days	X	X	X	X*
	409	Nature of Admission	0	X	X*	0
		Accommodation Charge:				
	410	Routine Inpatient Care	X*	X	X*	X*
	411	ICU/CCU	X*	X	X*	X*
	412	Newborn Nursery	X*	X	X*	X*
		Ancillary Charge:				
	413	Labor and Delivery	X*	X	X*	X*
	414	OR and RR	X*	X	X*	X*
	415	Respiratory Therapy	X*	X	X*	X*
	416	Rehabilitation Therapy	X*	X	X*	X*
	417	ER/OPD	X*	X	X*	X*
	418	Lab	X*	X	X*	X*
	419	Blood/Blood Processing	X*	X	X*	X*
	420	Drugs (Including IV)	X*	X	X*	X*
	421	DME/Supplies/Prothesis/etc.	X*	X	X*	X*
	422	Radiology	X*	X	X*	X*
	423	EXG	X*	X	X*	X*
	424	Other Diagnostic Procedure	X*	X	X*	X*
	425	Anesthesia	X*	X	X*	X*
	426	Dialysis	X*	X	X*	X*
	427	Not Otherwise Classified	X*	X	X*	X*
	451	Medicare Amount Paid	X	X	X	X
	452	Medicare Amount Indicator	A	A	A	A
	461	Beginning Date of Service	X	X	X	X
	462	Ending Date of Service	X	X	X	X
	499	Yearly Master Recipient Medicaid	A	0	0	0

Date: December 3, 1990

Contents of Uniform Claims Files and Availability by State (Continued)
1985-1988

Claim Type	Tape-to-Tape Data Element Number	Data Element Name	Availability of Data Element CA	MI	TN	GA
Inpatient Hospital (Acute) 1987-Forward	401	Admission Date	X	X	X*	X
	402	Discharge Date	X	X	X	X
	403	Discharge Status	X	X	X*	X*
	404	Primary Diagnosis Code	X	X	X	X*
	405	Secondary Diagnosis Code	X*	X	X	X*
	406	Uniform Principal Surgical Procedure Code	O	X	X*	X*
	406.1	State Specific Primary Procedure Code	O	X*	X*	X*
	406.2	State Specific Secondary Procedure Code	O	X*	X*	X*
	407	Principal Procedure Date	O	X	X*	X*
	408	Medicaid Covered Days	X	X	X	X*
	409	Nature of Admission	O	X	X*	O
	451	Medicare Amount Paid	X	X	X	X
	452	Medicare Amount Indicator	A	A	A	A
	461	Beginning Date of Service	X	X	X	X
	462	Ending Date of Service	X	X	X	X
	470.1	Accommodation Code 1	X*	X	X*	X*
	470.2	Charges-Accommodation Code 1	X*	X	X*	X*
	470.3	Days-Accommodation Code 1	X*	X	X*	X*
	471.1	Accommodation Code 2	X*	X	X*	X*
	471.2	Charges-Accommodation Code 2	X*	X	X*	X*
	471.3	Days-Accommodation Code 2	X*	X	X*	X*
	472.1	Accommodation Code 3	X*	X	X*	X*
	472.2	Charges-Accommodation Code 3	X*	X	X*	X*
	472.3	Days-Accommodation Code 3	X*	X	X*	X*
	473.1	Accommodation Code 4	X*	X	X*	X*
	473.2	Charges-Accommodation Code 4	X*	X	X*	X*
	473.3	Days-Accommodation Code 4	X*	X	X*	X*
	474.1	Accommodation Code 5	X*	X	X*	X*
	474.2	Charges-Accommodation Code 5	X*	X	X*	X*
	474.3	Days-Accommodation Code 5	X*	X	X*	X*
	475.1	Ancillary Code 1	X*	X	X*	X*
	475.2	Charges-Ancillary Code 1	X*	X	X*	X*
	476.1	Ancillary Code 2	X*	X	X*	X*
	476.2	Charges-Ancillary Code 2	X*	X	X*	X*
	477.1	Ancillary Code 3	X*	X	X*	X*
	477.2	Charges-Ancillary Code 3	X*	X	X*	X*
	478.1	Ancillary Code 4	X*	X	X*	X*
	478.2	Charges-Ancillary Code 4	X*	X	X*	X*
	479.1	Ancillary Code 5	X*	X	X*	X*
	479.2	Charges-Ancillary Code 5	X*	X	X*	X*

Date: November 6, 1989

Contents of Uniform Claims Files and Availability by State (Continued)
1985-1988

Claim Type	Tape-to-Tape Data Element Number	Data Element Name	Availability of Data Element CA	MI	TN	GA
	480.1	Ancillary Code 6	X*	X	X*	X*
	480.2	Charges-Ancillary Code 6	X*	X	X*	X*
	481.1	Ancillary Code 7	X*	X	X*	X*
	481.2	Charges-Ancillary Code 7	X*	X	X*	X*
	482.1	Ancillary Code 8	X*	X	X*	X*
	482.2	Charges-Ancillary Code 8	X*	X	X*	X*
	483.1	Ancillary Code 9	X*	X	X*	X*
	483.2	Charges-Ancillary Code 9	X*	X	X*	X*
	484.1	Ancillary Code 10	X*	X	X*	X*
	484.2	Charges-Ancillary Code 10	X*	X	X*	X*
	485.1	Ancillary Code 11	X*	X	X*	X*
	485.2	Charges-Ancillary Code 11	X*	X	X*	X*
	486.1	Ancillary Code 12	X*	X	X*	X*
	486.2	Charges-Ancillary Code 12	X*	X	X*	X*
	487	Total Number Accommodation Lines	A	A	A	A
	488	Total Number Ancillary Lines	A	A	A	A
	499	Yearly Master Recipient Medicaid Number	A	0	0	0
Long-Term Care	501	Service From Date	X	X	X	X
	502	Service To Date	X	X	X	X
	503	Admission Date	X	X	X*	X*
	504.1	Other Care Days	X	0	X*	0
	504.2	Other Care Days Indicator	X	0	X*	0
	505	Skilled Care Days	X	X	X*	X
	506	Intermediate Care Days	X	X	X*	X
	507	Leave Days	X	X	X*	X*
	508	Patient Status	X	X	X*	X
	509	Primary Diagnosis Code	X	X	X	X*
	510	Total Accommodation Charges	0	X	0	0
	511	Total Ancillary Charges	0	X	0	0
	551	Medicare Amount Paid	X	X	X	X*
	552	Medicare Amount Indicator	A	A	A	X*
	599	Yearly Master Recipient Medicaid Number	A	0	0	0

X = Available 0 = Not Available A = Assigned S = Summary Only X* = Limited Availability

*Not available for all years or all claims. See detailed documentation.

Date: March 22, 1991

Uniform Enrollment File

Uniform file format for 1985-forward enrollment data and availability of data by state

File Type	Tape-to-Tape Data Element Number	Data Element name	Availability of Data Element CA	MI	TN	GA
Header	700	Year of the File	A	A	A	A
	701	Medicaid ID Number	X	X	X	X
	702	Medicaid Case Number	X	X	X	X
	703	Date of Birth	X	X	X	X
	704	Date of Death	X	X	X	X
	705	Sex	X	X	X	X
	706	Race	0	X	X	X
	707	Social Security Number	X	X	X	X
	708	Medicare Number	X	0	X	X
	709	County Code	X	X	X	X
	710	State Code	A	A	A	A
	711	Zip Code	X	0	X	X
Monthly Data	750	Days of Enrollment	X	X	X	X
	751	State Eligibility Group	X	X	X	X
	752	Uniform Eligibility Group	A	A	A	A
	754	Spend-down Amount	X	X	X	X
	754.1	Health Insurance	X	X	X	0
	755	Capitation Flag	X	X	X	0
	756	State Capitation Code	X	X	X	0

X = Available 0 - Not available A = To be assigned

Date: July 24, 1989

Uniform Provider Files

Contents of uniform provider files and availability by state
(1985-forward)

Tape-to-Tape Data Element Number	Data Element	Availability of Data Element CA	MI	TN	GA
800.01	State Code (file)	A	A	A	A
800.02	Year (file)	A	A	A	A
801	Provider Number	X	X	X	X
802	Provider Type #1	X	X	X	X
803	Provider Type #2	X	X	0	X
804	Provider Type #3	X	X	0	X
804.1	Provider Type #4	0	X	0	X
804.2	Provider Type #5	0	X	0	0
804.3	Provider Type #6	0	X	0	0
805	Provider Name	X	X	X	X
806	Provider Address	X	X	X	X
806.1	Attention Line	X	X	0	0
807	Provider City	X	X	X	X
808	Provider State	X	X	X	X
809	Provider Zip Code	X	X	X	X
810	Provider County	X	X	X	X
811	Medicare Provider Number	X	0	X	X
812	Linking Provider Number	A	A	A	A
815	Number of Medicaid Claims for Year	L	L	L	L
817	Group Practice Indicator	X	X*	X	X
820	Specialty Certification Board	0	X*	0	0
821	Specialty Beginning Certification	0	0	0	0
822	Specialty Ending Certification Date	0	0	0	0
823	Total Annual Medicaid Reimbursement	L	L	L	L
824	AHA Number	L	L	L	L
825	Acute Beds	L	L	L	L
826	LTC Beds	L	L	L	L
827	Ownership	L	L	L	L
828	Claims Provider Type 1	L	L	L	L
829	Claims Provider Type 1 - Amt Paid	L	L	L	L
830	Claims Provider Type 1 - # Claims	L	L	L	L
831	Claims Provider Type 2	L	L	L	L
832	Claims Provider Type 2 - Amt Paid	L	L	L	L
833	Claims Provider Type 2 - # Claims	L	L	L	L

Date: October 26, 1989

Contents of uniform provider files and availability by state
(1985-forward)

Tape-to-Tape Data Element Number	Data Element	Availability of Data Element CA	MI	TN	GA
834	Claims Provider Type 3	L	L	L	L
835	Claims Provider Type 3 - Amt Paid	L	L	L	L
836	Claims Provider Type 3 - # Claims	L	L	L	L
837	Claims Provider Type 4	L	L	L	L
838	Claims Provider Type 4 - Amt Paid	L	L	L	L
839	Claims Provider Type 4 - # Claims	L	L	L	L
840	Claims Provider Type 5	L	L	L	L
841	Claims Provider Type 5 - Amt Paid	L	L	L	L
842	Claims Provider Type 5 - # Claims	L	L	L	L
843	Claims Provider Type 6	L	L	L	L
844	Claims Provider Type 6 - Amt Paid	L	L	L	L
845	Claims Provider Type 6 - # Claims	L	L	L	L
846	MMACS Number	L	L	L	L

X = Available O = Not Available A = Assigned X* = Limited Availability
L = Added From Other Files

Date: March 22, 1991

Early Returns File

CONTENTS OF THE 1985-FORWARD EARLY RETURNS FILES
AND AVAILABILITY BY STATE

DATA ELEMENT NUMBER	DATA ELEMENT NAME	AVAILABILITY OF DATA ELEMENT			
		CA	MI	TN	GA
900	Medicaid Enrollee Identification Number	X	X	X	X
901	Uniform Eligibility Group	X	X	X	X
902	Race	0	X	X	X
903	Age	X	X	X	X
904	Sex	X	X	X	X
905	Institutional Status	X	X	X	X
906	Enrollment Flags	X	X	X	X
907	Number of Months Person Enrolled	X	X	X	X
908	Spenddown Amount	X	X	0	0
909	Crossover Status As Used for Early Returns	X	X	X	X
909.1	Crossover Status Using Claims Data Only	X	X	X	X
909.2	Crossover Status Using Enrollment Data Only	X	0	X	X
912	Expenditures - Inpatient Psychiatric for Enrollees Under 22 Years of Age	X	X	X	X
913	Expenditures - Inpatient Psychiatric for Enrollees From 21 to 64 Years of Age	X	X	X	0
914	Expenditures - Inpatient Psychiatric for Enrollees Over 64 Years of Age	X	X	X	0
915	Expenditures - ICF/SNF Mental Health Service for Enrollees Over 64 Years of Age	X	X	X	0
916	Expenditures - ICF - Mental Retardation	X	X	X	X
917	Expenditures - ICF - All other	X	X	X	X
918	Expenditures - SNF - All other	X	X	X	X
922	Expenditures - Dental	X	X	X	X
929	Expenditures - Home Health	X	X	X	X
930	Expenditures - Long Term Care - Summary	X	X	X	X
931	Expenditures - Lab/X-ray	X	X	X	X
932	Expenditures - Prescribed Drugs	X	X	X	X
933	Expenditures - Other	X	X	X	X
934	Expenditures - Other Services - Summary	X	X	X	X
935	Inpatient Days	X	X	X	X
937	Inpatient Psychiatric Days for Enrollees Under 22 Years of Age	X	X	X	0
938	Inpatient Psychiatric Days for Enrollees From 21 to 64 Years of Age	X	X	X	0

X = Available 0 = Not Available A = Assigned X* = Available for some records only

Date: January 17, 1989

CONTENTS OF THE 1985-FORWARD EARLY RETURNS FILES
AND AVAILABILITY BY STATE
(continued)

DATA ELEMENT NUMBER	DATA ELEMENT NAME	AVAILABILITY OF DATA ELEMENT			
		CA	MI	TN	GA
939	Inpatient Psychiatric Days for Enrollees Over 64 Years of Age	X	X	X	0
940	Inpatient Psychiatric Discharges for Enrollees Under 22 Years of Age	X	X	X	0
941	Inpatient Psychiatric Discharges for Enrollees From 21 to 64 Years of Age	X	X	X	0
942	Inpatient Psychiatric Discharges for Enrollees Over 64 Years of Age	X	X	X	0
943	ICF/SNF Mental Health Days for Enrollees Over 64 Years of Age	X	X	X	0
944	ICF - Mental Retardation Days	X	X	X	X
945	ICF - All Other Days	X	X	X	X
946	SNF - All Other Days	X	X	X	X
949	Dental Visits	0	X	X	X
950	Other Practitioner Visits	X	X	X	X
951	Outpatient Hospital Visits	X	X	X	X
952	Clinic Visits	X	X	X	X
953	Home Health Services	X	X	X	X
954	Long Term Care Days - Summary	X	X	X	X
955	Prescriptions/Refills	X	X	X	X
956	Summary Ambulatory Visits	X	X	X	X
957	Age Group Indicators	X	X	X	X
958	Recipient Status	X	X	X	X
959	Sex/Race Indicators	0	X	X	X
962	Rural Health Clinics - Visits	X	0	0	X
963	Date of Birth	X	X	X	X*
964	SSA County Code	X	X	X	X*
966	Expenditures - EPSDT Screening	0	0	X	X
967	Expenditures - Waiver Services	0	X	0	X
968	EPSDT Visits	0	0	X	X

X = Available 0 = Not Available A = Assigned X* = Available for some records only

Date: March 22, 1991

CONTENTS OF THE 1985-FORWARD EARLY RETURNS FILES
AND AVAILABILITY BY STATE
(continued)

DATA ELEMENT NUMBER	DATA ELEMENT NAME	AVAILABILITY OF DATA ELEMENT			
		CA	MI	TN	GA
969	Leave Days	X	X*	X*	X*
970	Institutional Days	X*	X*	X	X
971	Total Expenditures	X*	X*	X	X
972	Expenditures - Inpatient Psychiatric for Enrollees of All Ages - Summary	X*	X*	X	0
973	Inpatient Psychiatric Days for Enrollees of All Ages - Summary	X	X	X	0
974	Inpatient Psychiatric Discharges for Enrollees of All Ages - Summary	X	X	X	0
975	State Eligibility Group	X	X	X	X
976	Capitation Flag from Enrollment File	X	X	X	X
977	Expenditures - Inpatient Non-Crossover	X	X	X	X
978	Expenditures - Inpatient Crossover	X	X	X	X
979	Expenditures - Physician Services: Visits - Inpatient Hospital	X*	X	X	X
980	Expenditures - Physician Services: Visits - Long Term Care	X*	X	X	X
981	Expenditures - Physician Services: Visits - Other	X*	X	X	X
982	Expenditures - Physician Services: Surgical Procedures - Inpatient Hospital	X*	X	X	X
983	Expenditures - Physician Services: Surgical Procedures - Other	X*	X	X	X
984	Expenditures - Physician Services: All Other	X*	X	X	X
985	Expenditures - Physician Services: Total	X*	X	X	X
986	Case Management Fees	0	X+	X	X++
987	State-Only Services	X	X	0	0

X = Available 0 = Not Available A = Assign X* = Available for some records only
+ = Available starting in 1986
++ = Available starting in 1987

Date: December 13, 1990

CONTENTS OF THE 1985-FORWARD EARLY RETURNS FILES
AND AVAILABILITY BY STATE
(continued)

DATA ELEMENT NUMBER	DATA ELEMENT NAME	AVAILABILITY OF DATA ELEMENT			
		CA	MI	TN	GA
988	Premium Payments	0	X	X	0
989	Expenditures - Clinic - Total	X	X	X	X
990	Expenditures - Other Practitioner - Total	X	X	X	X
991	Expenditures - Outpatient Hospital - Total	X	X	X	X
992	Expenditures - Rural Health - Total	X	0	X	X
993	Physician Visits - Inpatient Hospital	X*	X	X	X
994	Physician Visits - Long Term Care	X*	X	X	X
995	Physician Visits - Other	X*	X	X	X
996	Physician Surgical Procedures - Inpatient Hospital	X*	X	X	X
997	Physician Surgical Procedures - Other	X*	X	X	X
998	Inpatient Discharges - Non-Crossover	X	X	X	X
999	Inpatient Discharges - Crossover	X	X	X	X
1000	Inpatient Hospital - Length of Stay	X	X	X	X
1001	Inpatient Psychiatric Length of Stay for Enrollees Under 21 Years of Age	X	X	X	0
1002	Inpatient Psychiatric Length of Stay for Enrollees From 21 to 64 Years of Age	X	X	X	0
1003	Inpatient Psychiatric Length of Stay for Enrollees Over 64 Years of Age	X	X	X	0
1004	Early Return Final Capitation Flag	X	X	X	X

X = Available 0 = Not Available A = Assigned X* = Available for some records only

Date: December 13, 1990

APPENDIX II

Tables

APPENDIX TABLE I

MEDICAID TOTAL ENROLLEES BY STATE
TAPE TO TAPE STATES
1980 - 1988

	CALIFORNIA		GEORGIA		MICHIGAN		TENNESSEE	
YEAR	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS
1980	3,572,897	2,568,674	471,078	385,563	1,112,915	852,373	447,224	354,682
1981	3,585,446	2,631,518	473,318	390,018	1,235,719	951,154	439,833	351,579
1982	3,611,795	2,647,997	505,130	420,943	1,195,992	919,932	N/A	N/A
1983	3,472,889	2,568,376	539,855	439,636	1,208,030	946,632	413,951	331,256
1984	3,443,706	2,568,115	554,346	451,656	1,150,082	897,416	422,789	336,317
1985	3,480,227	2,569,979	564,449	451,040	1,083,705	848,266	420,394	328,151
1986	3,581,039	2,641,743	588,862	465,741	1,058,970	838,525	460,090	352,080
1987	3,577,985	2,656,708	605,396	476,058	1,045,024	820,037	499,933	384,759
1988	3,682,896	2,725,851	626,320	489,396	1,037,438	812,947	551,537	428,611
PERCENT CHANGE	+3.0	+6.1	+32.9	+27.0	-6.8	-3.7	+23.3	+20.9

APPENDIX TABLE 2

MEDICAID AFDC ADULT ENROLLEES BY STATE
TAPE TO TAPE STATES
1980 - 1988

	CALIFORNIA		GEORGIA		MICHIGAN		TENNESSEE	
YEAR	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS
1980	N/A	N/A	76,273	55,610	305,099	223,419	63,772	45,647
1981	N/A	N/A	80,811	59,592	352,333	264,958	66,304	47,738
1982	N/A	N/A	95,874	73,545	348,503	260,945	N/A	N/A
1983	914,304	622,032	108,397	81,022	354,258	271,951	74,946	55,248
1984	868,475	593,019	111,424	84,127	330,544	252,874	77,988	56,711
1985	876,044	590,765	112,672	81,940	303,275	232,119	75,659	53,326
1986	893,182	597,720	117,562	84,071	300,060	233,259	81,159	56,552
1987	885,560	595,305	120,332	85,645	287,903	220,728	98,457	69,010
1988	907,642	606,266	125,084	88,142	275,729	209,918	109,174	76,686
PERCENT CHANGE	N/A	N/A	+64.5	+57.1	-9.8	-6.3	+70.3	+67.4

APPENDIX TABLE 3

MEDICAID AFDC CHILD ENROLLEES BY STATE
TAPE TO TAPE STATES
1980 - 1988

	CALIFORNIA		GEORGIA		MICHIGAN		TENNESSEE	
YEAR	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS
1980	N/A	N/A	191,641	147,945	595,796	450,643	184,812	138,886
1981	N/A	N/A	197,285	152,400	663,921	501,286	184,136	137,775
1982	N/A	N/A	213,862	169,722	638,323	481,319	N/A	N/A
1983	1,428,103	1,047,234	234,163	181,808	559,004	439,906	157,966	119,406
1984	1,438,131	1,066,885	240,932	187,204	522,418	407,307	163,100	120,565
1985	1,446,032	1,068,600	243,493	184,870	486,628	379,741	160,609	114,827
1986	1,499,005	1,108,579	253,605	192,081	463,718	365,888	195,673	135,417
1987	1,494,478	1,117,031	262,067	197,704	455,428	355,350	211,145	149,347
1988	1,529,165	1,137,421	276,555	208,000	455,287	354,371	244,323	175,529
PERCENT CHANGE	N/A	N/A	+44.5	+41.5	-23.5	-21.3	+32.6	+26.8

APPENDIX TABLE 4

MEDICAID BLIND/DISABLED ENROLLEES BY STATE
TAPE TO TAPE STATES
1980 - 1988

	CALIFORNIA		GEORGIA		MICHIGAN		TENNESSEE	
YEAR	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS
1980	484,187	429,409	101,865	91,460	107,745	94,938	98,709	85,370
1981	480,028	431,486	99,279	91,301	115,184	101,940	96,118	85,444
1982	479,668	428,276	101,079	92,485	113,150	100,943	N/A	N/A
1983	464,915	415,035	103,887	93,896	113,187	100,567	92,509	83,013
1984	475,229	424,316	106,849	96,803	116,228	103,494	93,063	84,143
1985	489,296	434,208	112,138	101,060	120,357	108,250	96,071	85,933
1986	511,483	454,407	115,603	104,832	125,447	113,001	98,629	88,438
1987	524,592	467,958	119,225	107,911	129,562	116,856	105,952	95,040
1988	542,643	487,605	123,017	110,973	133,985	121,151	115,881	106,065
PERCENT CHANGE	+12.0	+13.5	+21.8	+20.9	+24.3	+27.4	+16.2	+24.7

APPENDIX TABLE 5

MEDICAID AGED ENROLLEES BY STATE
TAPE TO TAPE STATES
1980 - 1988

	CALIFORNIA		GEORGIA		MICHIGAN		TENNESSEE	
YEAR	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS	PERSONS	PERSON YEARS
1980	503,110	419,492	98,608	88,724	93,126	77,064	93,615	80,814
1981	486,465	412,324	93,419	84,954	93,484	76,925	87,203	76,729
1982	483,255	406,745	91,693	83,282	86,557	71,619	N/A	N/A
1983	440,866	376,312	91,021	81,097	84,692	69,377	78,427	68,316
1984	428,248	367,584	93,287	82,328	85,850	69,879	79,081	69,482
1985	422,052	357,525	90,612	80,255	85,846	70,246	77,636	67,960
1986	428,686	363,544	89,479	78,726	84,781	69,348	76,441	66,152
1987	427,603	363,317	88,433	77,782	84,764	68,869	76,412	65,679
1988	442,845	375,183	86,815	76,160	84,806	68,512	77,032	66,797
PERCENT CHANGE	-12.1	-10.5	-12.1	-14.6	-8.6	-10.4	-18.1	-17.3

APPENDIX TABLE 6

ADJUSTED HOSPITAL DISCHARGES PER 1000 MEDICAID ENROLLEES
TAPE TO TAPE STATES
1980 - 1988

YEAR	CALIFORNIA	GEORGIA	MICHIGAN	TENNESSEE
1980	182	234	186	N/A
1981	183	234	187	N/A
1982	171	224	178	N/A
1983	165	227	182	N/A
1984	162	209	157	N/A
1985	162	212	158	235
1986	163	212	177	213
1987	161	218	154	193
1988	157	217	150	196
PERCENT CHANGE	-13.7	-7.3	-19.4	N/A

APPENDIX TABLE 7

ADJUSTED HOSPITAL DISCHARGES PER 1000 MEDICAID ENROLLEES
NON CROSSOVERS
TAPE TO TAPE STATES
1980 - 1988

YEAR	CALIFORNIA	GEORGIA	MICHIGAN	TENNESSEE
1980	100	140	N/A	142
1981	100	137	N/A	129
1982	104	130	122	N/A
1983	98	117	124	130
1984	99	133	112	142
1985	100	135	122	150
1986	99	135	133	158
1987	98	142	134	154
1988	98	144	133	162
PERCENT CHANGE	-2.0	+21.4	N/A	+14.1

APPENDIX TABLE 8

ADJUSTED HOSPITAL DAYS PER 1000 MEDICAID ENROLLEES
FOR NON CROSSOVERS
TAPE TO TAPE STATES
1980 - 1988

YEAR	CALIFORNIA	GEORGIA	MICHIGAN	TENNESSEE
1980	525	681	N/A	739
1981	532	671	N/A	649
1982	569	598	771	N/A
1983	488	657	763	619
1984	450	742	650	668
1985	536	787	646	715
1986	533	778	722	755
1987	552	847	732	744
1988	530	853	690	814
PERCENT CHANGE	+0.8	+25.3	-10.5 (1982 TO 1988)	+10.1

APPENDIX TABLE 9

ADJUSTED PHYSCIAN VISIT RATES PER ENROLLEE
NON CROSSOVERS
TAPE TO TAPE STATES
1980 - 1988

YEAR	CALIFORNIA			GEORGIA			MICHIGAN			TENNESSEE		
	HOSPITAL	OTHER	TOTAL	HOSPITAL	OTHER	TOTAL	HOSPITAL	OTHER	TOTAL	HOSPITAL	OTHER	TOTAL
1980	N/A	N/A	2.38	N/A	N/A	1.83	N/A	N/A	N/A	N/A	N/A	1.68
1981	N/A	N/A	2.39	N/A	N/A	1.95	N/A	N/A	N/A	N/A	N/A	2.09
1982	N/A	N/A	2.70	N/A	N/A	1.68	N/A	N/A	3.08	N/A	N/A	N/A
1983	N/A	N/A	2.58	N/A	N/A	1.65	N/A	N/A	3.23	N/A	N/A	1.77
1984	N/A	N/A	2.57	N/A	N/A	1.99	N/A	N/A	3.02	N/A	N/A	1.91
1985	0.42	2.14	2.56	0.49	1.55	2.04	0.58	2.63	3.21	0.44	1.48	1.92
1986	0.43	2.16	2.59	0.48	1.53	2.01	0.71	2.85	3.56	0.45	1.64	2.09
1987	0.45	2.19	2.64	0.54	1.51	2.05	0.74	2.76	3.51	0.52	1.78	2.30
1988	0.45	2.13	2.59	0.58	1.52	2.10	0.73	2.82	3.56	0.61	1.93	2.54

APPENDIX TABLE 10

ADJUSTED OUTPATIENT VISIT RATES PER ENROLLEE
FOR NON CROSSOVERS
TAPE TO TAPE STATES
1980 - 1988

YEAR	CALIFORNIA	GEORGIA	MICHIGAN	TENNESSEE
1983	0.94	N/A	0.61	1.17
1984	1.00	N/A	0.55	1.59
1985	0.94	N/A	0.55	1.30
1986	0.98	1.43	0.83	1.37
1987	0.99	1.60	0.90	1.37
1988	1.02	1.61	1.04	1.40

* INCLUDES OTHER PRACTITIONER VISITS, OUTPATIENT HOSPITAL VISITS, CLINIC VISITS, AND RURAL HEALTH VISITS. EPSDT VISITS ARE ALSO INCLUDED FOR GEORGIA AND TENNESSEE.

APPENDIX TABLE 11

PERCENT OF AGED ENROLLEES WITH A NURSING HOME STAY
TAPE TO TAPE STATES
1980 - 1988

YEAR	CALIFORNIA	GEORGIA	MICHIGAN	TENNESSEE
1981	18.5	24.4	39.7	25.5
1982	18.2	26.9	42.9	N/A
1983	19.1	28.7	44.1	27.2
1984	19.4	28.3	43.5	28.3
1985	19.9	29.4	43.3	30.1
1986	19.6	29.4	44.7	32.0
1987	19.7	30.0	45.1	33.5
1988	18.8	31.4	44.9	34.3

APPENDIX TABLE 12

HOSPITAL EXPENDITURES PER PERSON YEAR
AFDC ENROLLEES
TAPE TO TAPE STATES
1980 - 1988

YEAR	CALIFORNIA	GEORGIA	MICHIGAN	TENNESSEE
1980	348	203	268	185
1981	328	249	290	189
1982	351	286	275	N/A
1983	369	345	318	270
1984	363	331	307	338
1985	378	395	362	467
1986	383	395	467	519
1987	392	460	456	471
1988	409	504	449	414
PERCENT CHANGE	+18	+149	+68	+125

APPENDIX TABLE 13

NON-HOSPITAL EXPENDITURES PER PERSON YEAR
AFDC ENROLLEES
TAPE TO TAPE STATES
1980 - 1988

YEAR	CALIFORNIA	GEORGIA	MICHIGAN	TENNESSEE
1980	363	218	329	226
1981	391	248	359	241
1982	384	241	339	N/A
1983	323	276	330	342
1984	361	299	333	379
1985	379	338	369	426
1986	403	385	451	521
1987	420	470	492	604
1988	431	578	550	727
PERCENT CHANGE	+18.7	+65.1	+66.9	+221.7

APPENDIX TABLE 14

NURSING HOME EXPENDITURES PER PERSON YEAR
AGED ENROLLEES
TAPE TO TAPE STATES
1980 - 1988

YEAR	CALIFORNIA	GEORGIA	MICHIGAN	TENNESSEE
1980	1659	1319	N/A	1330
1981	1428	1484	3296	1612
1982	1400	1613	3837	N/A
1983	1493	1787	4297	1997
1984	1590	1821	4414	2167
1985	1918	2014	4396	2355
1986	2060	2179	4548	2619
1987	2103	2472	4755	2873
1988	2099	2766	5055	3027
PERCENT CHANGE	+26.5	+109.7	+53.3 (1981 TO 1988)	+127.6

APPENDIX TABLE 15

ADJUSTED TOTAL EXPENDITURES PER PERSON YEAR
MEDICAID ENROLLEES
TAPE TO TAPE STATES
1980 - 1988

YEAR	CALIFORNIA	GEORGIA	MICHIGAN	TENNESSEE
1980	1,230	908	N/A	681
1981	1,246	1,048	1,345	736
1982	1,256	1,074	1,695	N/A
1983	1,257	1,226	1,841	1,135
1984	1,288	1,270	1,849	1,284
1985	1,435	1,449	1,900	1,507
1986	1,514	1,558	2,199	1,733
1987	1,579	1,816	2,297	1,791
1988	1,614	2,079	2,532	1,872
PERCENT CHANGE	+31	+129	+88 (1981 TO 1988)	+175

CMS LIBRARY
3 8095 00012709 8